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PSYCHOSES ASSOCIATED WITH INFLUENZA

I. GENERAL DATA: STATISTICAL ANALYSIS *

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BOSTON

Sir William Osler[1] succinctly remarks that apparently "almost every form of disease of the nervous system may follow influenza." This postulate is seemingly quite justified by the accretion of neurophychiatric data from cases in the recent pandemic. The frequency of mental disturbances accompanying the acute illness in the epidemic has been the subject of frequent comment, and the wave of psychiatric material that followed in its wake was unexpectedly large and correspondingly interesting.

The literature on the mental diseases associated with influenza is remarkable for its paucity and the inadequacy of the communications, and this well applies to toxic psychoses in general. Bonhoeffer,[2] considered authoritative on the subject, ascribed this in a measure to the fact that "for the most part communications concerning the psychoses accompanying or following infectious disease proceed from the pens of others than psychiatrists. . . . A practical knowledge of the frequency and nature of the (mental) diseases encountered can only be learned from material that includes both internal and mental diseases."

Precisely because of the latter point, the Psychopathic Hospital affords unusual and highly desirable opportunities for the study and evaluation of data concerning the influenzal psychoses. Not only are many cases sent to the Psychopathic Hospital seen early in the course of the mental disease, but in all instances careful collateral study is made from the physical, serologic and social standpoints. The average influenza patient cared for at home is not seen by a psychiatrist; the average institutional patient is usually seen late in the course of the mental disease, long after aid from the physical side is practicable.

For these reasons the series of cases observed at the Boston Psychopathic Hospital during the recent epidemic are of particular importance. This institution serves a varied function in the community, but primarily it is a clearing house for cases of mental disease, and above all for the study of incipient (or borderline) mental cases. All of the cases here presented were regularly admitted patients, affording a certain definite uniformity of methods of study of the clinical material.

DIAGNOSTIC METHODS

A word is in place as to the methods used in the diagnosis of the "influenza" and of the "psychosis." As to the former, the statement of the attending physician, substantiated by the descriptions offered by the family or friends, was in most cases the chief evidence. In a considerable number we were able to make or confirm the diagnosis intramurally. In a few instances we have only the patient's word. For the accuracy of these we have no criterion or proof. On the other hand, the ubiquity of the disease, the singularity of its symptoms and course, and the absence of intercurrent epidemics in Boston at that time make the diagnosis of an acute febrile illness of short duration with respiratory tract symptoms and disproportionate prostration comparatively simple. Finally, it is certain that the percentage of error in the diagnosis is under the circumstances probably less than the average error in diagnosis of acute illness of all kinds, at all times, by all physicians.[3]

The psychiatric diagnoses in the Psychopathic Hospital are arrived at after this fashion. On the fifth day of the patient's stay, the case is presented to the entire staff by one of its members with the complete data of outside history, mental, physical and serologic examinations, and the special examinations, such as spinal fluid, roentgenographic, clinical chemistry, ophthalmoscopic and psychometric. At this time a preliminary diagnosis is made by vote. In a few cases this diagnosis is changed by or after the tenth day when the reconsideration of doubtful cases is made, usually at staff conference.

I hold no brief for the diagnostic ability of the staff of this hospital. I am glad to be able to refer to the statistical investigations of Lowrey,[4] the well substantiated conclusion of which is that the diagnoses made here are in some 85 per cent. correct (as measured by longer observation in other institutions).

STATISTICAL DATA

The epidemic appeared in Boston about September 15. From that time until December 15, a period of three months, 100 cases of mental disturbance associated with influenza were admitted here. Of these 100, data are complete on only eighty, and except for some general statistics it is the latter number which is considered.

* From the Psychopathic Hospital, series of 1918.

1. Osler, William: Principles and Practice of Medicine, New York, 1915.
2. Bonhoeffer, K., in Aschaffenburgs Handbuch, Leipzig and Vienna, 1912.
3. Compare Cabot, R. C.: Differential Diagnosis, Presented Through an Analysis of Three Hundred and Eighty-Five Cases, Ed. 2, Philadelphia, W. B. Saunders, 1912.
4. Lowrey, L. G.: An Analysis of the Accuracy of Psychopathic Hospital Diagnoses, Am. J. Insanity, to be published.

Diagnostic Groups.—For the sake of statistical convenience and clarity it is desirable to introduce here a diagnostic grouping which will be elaborated on later in the paper. The psychiatric diagnoses in this series of cases vary, of course, within wide limits, including nine of Southard's eleven major groups of mental disease.[5] On the basis of numerical preponderance, however, they are readily classifiable into four groups:

Group I comprises those cases generally agreed to be states of delirium, dependent on the acute infection. "Infection-toxin delirium" seems to me better than the recognized reversal of the phrase, namely, "toxic-infectious," since from the name the latter may legitimately be interpreted to include incidents of delirium tremens superimposed on pneumonia.

Group II comprises the cases of frank dementia praecox.

Group III comprises the other forms of psychoses encountered which were thought to fit more or less precisely the generally recognized entities.

Group IV comprises the cases in which there was enough doubt or difference in opinion on the part of the staff to justify leaving the case unclassified. That is to say, this is a group in which we did not feel certain of any one diagnosis.

On the basis of this grouping, the numerical incidence of the cases was as shown in Table 1 and Chart 1.

The large size of Group IV will be remarked. It is here appropriate to point out that in many of these cases time will be the great diagnostician. Already one of the patients included in that group has returned to the hospital with this time a clear picture of dementia praecox. A forecast of probabilities, to be accepted only at its face value, is chiefly interesting in its confirmation of the results in the established groups. In other words, the indications from the unclassified group would seem only to augment in numbers the tendencies pointed to by the data of Groups I, II and III. Thus of that group, at the present time, three cases seem most likely to have been forms of delirium and three of dementia praecox; six cases are between those two diagnoses, and the remaining four cases are of other types. On a basis of probabilities, the totals of the eighty cases, plus the probabilities in the remaining twenty cases of the hundred, are presented in Table 2 and in Chart 1.

TABLE 1.—NUMERICAL SUMMARY OF EIGHTY CASES

Group I, delirium	16
Group II, dementia praecox	25
Group III, other psychoses	23
Group IV, unclassified	16

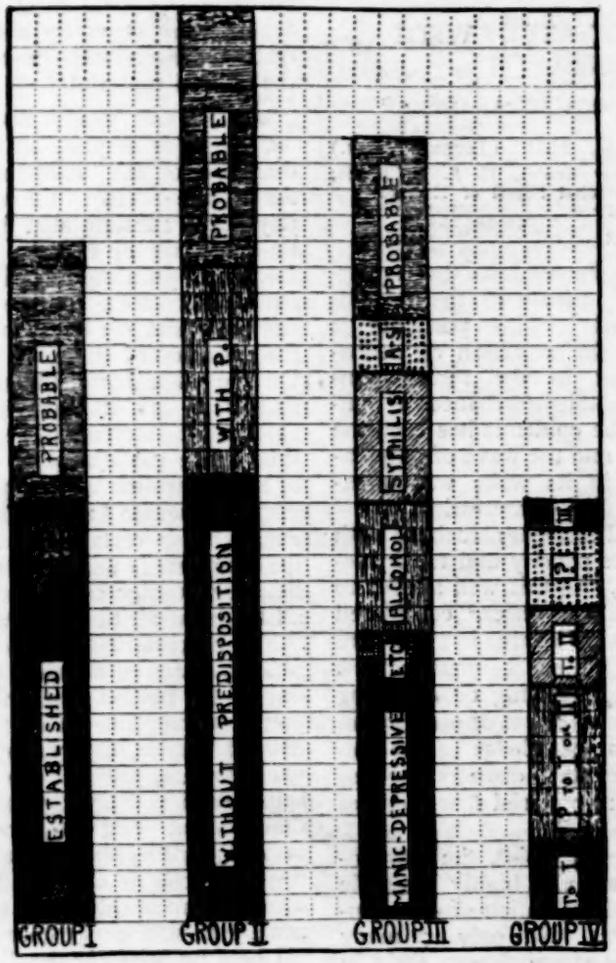

Chart 1.—A numerical summary of diagnostic groups. Vertical units represent individual cases.

TABLE 2.—NUMERICAL SUMMARY OF ONE HUNDRED CASES ON BASIS OF PROBABILITIES

Group I, delirium	26
Group II, dementia praecox	35
Group III, other psychoses	30
Group IV, unclassified	9

From Tables 1 and 2 there appears at once the most conspicuous and remarkable fact of the present data. This is the unexpected frequency of dementia praecox as a postinfluenzal psychosis. It occurred more frequently in this hospital than all other psychotic forms combined, delirium excluded, and even more frequently than the delirium which should be the most common. In the latter cases, however, the fallacy is quite obvious, since the great majority of deliria are never sent to a hospital for mental diseases. In fact, it may be parenthetically remarked that some authors do not recognize delirious states as psychoses, the chief reason being, however, that there is no established definition of psychosis, rather than that the nature of delirium is not appreciated. However, the strength of the first comparison is undiminished, and becomes more remarkable on further consideration. This is, of course, necessary, since not all of the cases of dementia praecox were storms from a clear sky. The matter will be considered in detail below.

Sex.—The 100 cases comprise forty-three males and fifty-seven females. The eighty cases more extensively studied comprise thirty-four males and forty-six females. In both groups the proportions are the same, the females preponderating by 57 per cent. to 43 per cent.

TABLE 3.—SEXUAL DISTRIBUTION ACCORDING TO PSYCHIATRIC DIAGNOSES

	Eighty Cases, Established Diagnoses		One Hundred Cases, Probable Diagnoses	
	Males	Females	Males	Females
Group I, delirium	9	7	14	12
Group II, dementia praecox	4	21	8	27
Group III, other psychoses	15	8	16	14
Group IV, unclassified	6	10	5	4

On the basis of the tentative groupings detailed above, the sexual distribution appears as in Table 3. The chief deduction from this table is the predominance of the female sex in the patients presenting the picture of dementia praecox. Relative equality obtains

5. Southard, E. E.: J. Lab. & Clin. Med. 4:31 (Nov.) 1918; Tr. Am. Neurol. Assn., 1918.

elsewhere despite the influence of alcohol in augmenting the proportion of males in Group III (e. g., acute alcoholic psychoses).

Age.—The age range was from 16 to 69, the youngest patient being a male, the oldest a female. The youngest woman was 18, the oldest man 61. The average of all was 31.7 years, without marked differences in the sexes (e. g., for Group I, males, thirty-three; females, thirty-one).

The average ages of patients in the diagnostic groups appear in Table 4. There is a statistical suggestion from this table of the bizarre hypothesis that the age is a factor in the determination of the form of resultant psychosis. Thus below, say 18, no serious mental complication is common. In the succeeding decade the tendency is toward the development of dementia praecox; in the next decade, toward some other psychotic entity. It is not pretended that this theory is to be taken entire, but neither is it wholly to be ignored. Nothing that contributes to the further elucidation of the question, "Why does a specific individual develop dementia praecox?" should fail to receive consideration.

Time Factors.—The two principal considerations concerning temporal factors are the duration of the influenza, particularly in relation to the psychoses engendered, and the chronology of the influenza and respective psychoses.

Taking up first the matter of the duration of the influenza, we at once encounter a large factor of unreliability. In the first place, there might be some theoretical objections to the designation of any particular moment as the terminal moment of a specific attack of influenza. This can be pragmatically circumvented by assuming that the influenza terminates when the fever abates, that is, when the temperature returns to normal and there remains. Not only, however, are many of the patients not informed by their physicians of the precise date of this termination, but in not a few cases the physicians themselves evidently did or do not know. However, the difficulty was actually more apparent than real, because in most cases in which it was not known it could be estimated from the relative time spent in bed, the subjective symptoms, etc.

TABLE 4.—AVERAGE AGE OF PATIENTS ACCORDING TO DIAGNOSTIC GROUPS

I, delirium	32
II, dementia praecox	23
III, other psychoses	40
IV, unclassified	34

TABLE 5.—DURATION OF ATTACKS OF INFLUENZA, FROM HISTORIES

Uncomplicated Influenza:	
Range of duration	From 2 to 17 days
Average duration (49 cases averaged)	6 days
Influenza with Known Pneumonia:	
Range of duration	From 3 to 25 days
Average duration (19 cases averaged)	13 days

On this working basis the facts presented in Table 5 were obtainable. The reputed duration of the acute illness was, as may be observed, quite variable; but the listed cases fall into four rather clearly defined groups: those of a duration of less than five days, those of from five days to a week in duration, those lasting from eight days to two weeks, and those exceeding that length of time. Thirty-six per cent. of all the cases fall into the second group. On this basis, Table 6 is presented to show the relative frequency of each, and of the development of dementia praecox as the specific psychosis. The same is represented graphically in Chart 2, in five day periods.

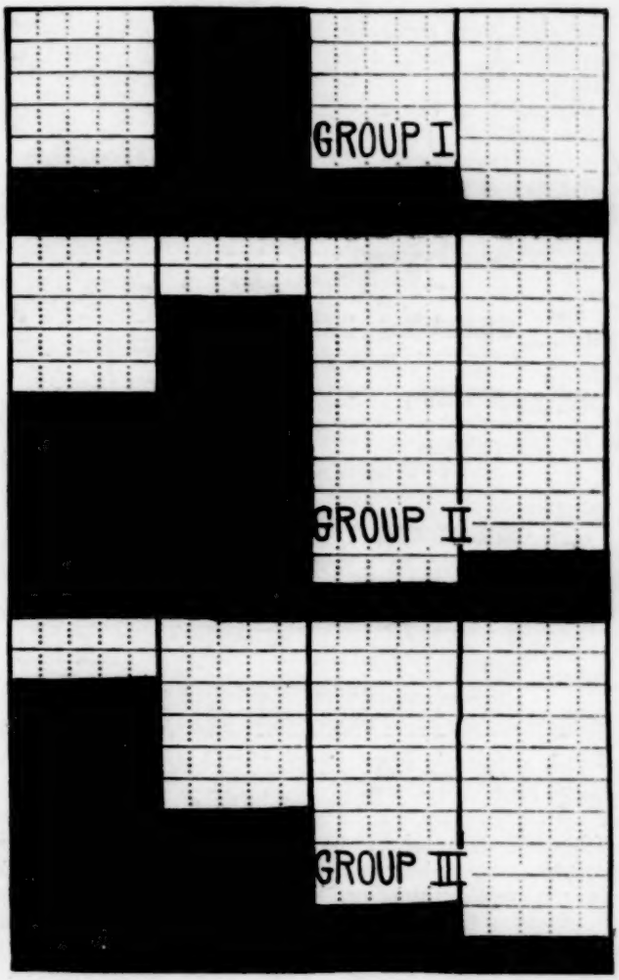

Chart 2.—Influence of duration of influenza on number of resultant psychoses. Vertical units represent individual cases, horizontal units, days.

The conclusions justifiable from these statistics are, first, that the duration of the influenza or influenza and pneumonia precipitating mental diseases is probably not appreciably greater than that of the average attacks of influenza or influenza and pneumonia in the present epidemic. The frequency of pneumonia (about 25 per cent.) is certainly larger than that obtaining generally, but this may in part be due to the fact that at least two thirds of our "pneumonia" patients were brought here, more or less moribund, because of the deliria of profound toxemia.

The second conclusion concerns the tendency of dementia praecox to show no constant relation to the duration of the influenzal attack precipitating it. As large a percentage of cases of dementia praecox followed the briefer attacks as followed the most prolonged and presumably more severe.

TABLE 6.—INCIDENCE OF PSYCHOSES AND PARTICULARLY OF DEMENTIA PRAECOX ACCORDING TO DURATION OF INFLUENZA

Duration of Influenza	Number of Cases, All Forms	Cases of Dementia Praecox No.	Per Cent.
From 1 to 4 days	18	6	33
From 5 to 7 days	29	10	32
From 8 to 14 days	18	5	28
From 15 to 25 days	12	4	33

In the matter of the chronological relationships between the influenza and the psychoses, graphic presentation is most helpful.

Chart 3 presents the average interval between the somatic and psychic episodes. To be more precise, it represents the relative chronology of the fever accompanying influenza and the manifestation of psychotic symptoms following it. As will be noted in all instances save the deliria, the psychosis began on the average after the fever had abated. This interval varies from less than two days in the alcoholic psychoses to 8.5 days in the cyclothymic psychoses.

This chart is a partial verification of Bonhoeffer's principle, that "in general one may say that the later in the convalescence the psychosis begins, the more doubtful is its symptomatic character and the more frequently does it bear the stamp of endogenous psychic disturbances." It is also a valuable witness to Bonhoeffer's theory of the elaboration of the endotoxins as a result of stimulation by acute infection toxins, the former bringing about the psychoses.

An analysis of this interval by five day periods is presented in Chart 4. This chart has reference to the day of onset of the psychosis, as compared to the days of the influenza; that is, those cases of psychosis manifested during the first five days of the illness make up the first pillar, those during the second five days the second pillar, etc.

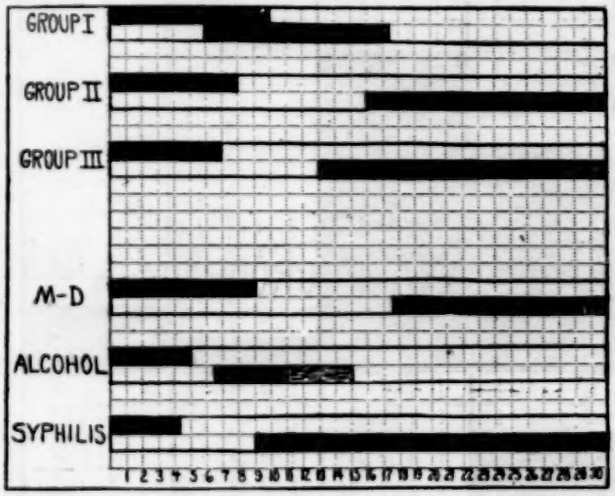

Chart 3.—Relative chronology of fever and psychosis. In each couplet the upper bar represents the influenzal pyrexia in days duration, the lower the psychotic manifestations. Units represent single days.

The conspicuous evidence offered by this chart is the tendency of simple delirium to occur early in the course of the disease, the postinfectious or "collapse" delirium being quite exceptional; and, on the other hand, the uniform rate of incidence of dementia praecox throughout the postinfluenzal period. Thus no cases of delirium occurred after the fifteenth day, whereas there were as many cases of dementia praecox between the twentieth and twenty-fifth days as between the first and fifth, or any other period. Further time studies have been made of the dementia praecox cases, but these must be omitted here for want of space.

SYMPTOMATOLOGY

A representative but synthesized case history reads as follows:

During the convalescence from influenza, Miss X suddenly became excited and rushed from her bed into the street, screaming. She was recaptured and confined in bed, but seemed to be bewildered, deluded and hallucinated. The motor excitement faded: the perverted ideation became augmented, and the family physician advised the Psychopathic Hospital. At about this stage the diagnosis is always in more or less doubt between various obvious possibilities. Subsequently the symptoms follow in most cases a more or less stereotyped course and the diagnosis becomes clear; that is, one case will progressively clear up and the patient be sent home recovered, with a diagnosis of postinfluenzal delirium; another will manifest more and more evidences of schizophrenia and be committed with a diagnosis of dementia praecox, etc.

Depression is traditionally the postinfluenzal symptom *par excellence*. Osler comments on it; most writers in psychiatry as well as general medicine follow suit. But depression as an emotional state of the psychoses following influenza is not strictly comparable with the depression which presumably is common after the disease in nonpsychotic subjects. (I am aware of one instance in which a mild tendency toward hypomania rather than the reverse was observed in a normal young man, and so recognized by himself.) Aside from a few cases of postinfluenzal depression in which the diagnosis was in doubt between the normal and the psychotic, depression was in this series distinctly uncommon. Only three cases of the depressed phase of manic-depressive psychosis were encountered. Only about a fourth of all the cases showed any depression at any time, and it was rarely constant when present.

The heterogeny of symptoms is manifest from the divers forms of psychoses presented. Certainly the most common two are delusions and hallucinations. The delusions are of all sorts: somatic, referred, paranoid, transformation, grandeur, etc. One sort or another were present in seventy of eighty cases. Hallucinations in one or more fields occurred in all of the cases diagnosed dementia praecox, and in all of the cases of delirium, and in two thirds of the remaining cases. The constancy of hallucinations in delirium as here seen might arouse curiosity as to why Regis and others have specified a particular "hallucinatory" type of delirium (confusion mentale aiguë), as if hallucinations were not generally present.

No cases were monosymptomatic. In the first two groups, however, there were characteristic symptoms. In the deliria, it is amnesia. This was present in all cases, either as an amnesia during the acute psychotic period for past events (including the paramnesia of the Korsakow syndrome) or an amnesia after the acute psychosis for events transpiring during it, or, as not infrequently occurred, both. The second form is an integral symptom of delirium, but it is not an absolute differential point, as it occasionally occurs in dementia praecox and some other forms.

In the dementia praecox cases the characteristic and omnipresent symptom was schizophrenia, used in the symptomatic sense. As this is, in fact, the criterion of the diagnosis of dementia praecox, the foregoing statement is axiomatic. A more remarkable fact is the occurrence of distinctly schizophrenic symptoms in cases in which the patients quickly recover and which are necessarily diagnosticated delirium. Six cases were left in doubt because of this fact, and one third

of the cases diagnosed delirium showed at one time or another frankly schizophrenic symptoms.

Group III is too heterogeneous to allow of any such representation. The specific psychoses were so far as diagnosticated more or less true in type, and this is not the place to review the symptoms of the recognized psychoses.

Motor excitement and emotional acceleration were not conspicuous except in Group III. Here both the alcoholic psychoses and the cyclothymoses (especially manias) showed the characteristic hyperkinesis and hyperthymia.

DIAGNOSTIC GROUPS

The four groups used throughout this paper are, of course, by no means as homogeneous as their captions might suggest, and it is proposed to analyze, in a degree, their componency. The lack of space prohibits illustration by means of case histories or even abstracts, but as these are to appear later, it is perhaps desirable to present here only the structural framework of the series.

Group I.—The cases diagnosed "toxic-infectious delirium" or "delirium with infectious disease" (American Medico-Psychological Association nomenclature) embrace three forms of delirium. These forms are not based, as by Kraepelin,[6] on ambiguities, such as "confusion" and "exhaustion," or as by Bonhoeffer,[2] on the predominant symptom. They are based on the most simple and the only uniform factor, namely, time. It is in our experience here quite impossible to follow either Kraepelin or Bonhoeffer in distinguishing types of delirium. On the other hand, the deliria are in all cases of one of three types: prefebrile delirium; (cum-) febrile delirium, or postfebrile delirium. Either of the first two may be prolonged over into the subsequent period. This classification is so preeminently valuable from a pragmatic standpoint, and the subdivisions of the German writers so bewildering and so conducive to ambiguous descriptions, that for the present I feel that no further justification is required.

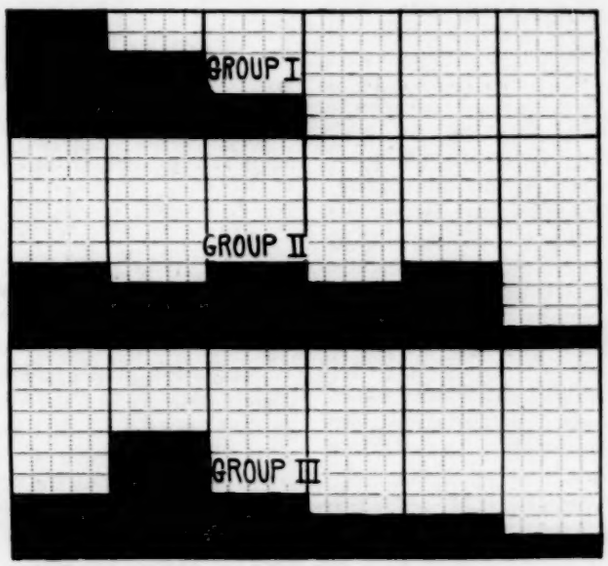

Chart 4.—Influence of duration of influenza on time of onset of resultant psychoses. Abscissas represent time periods in five day groups; ordinates, number of cases.

Statistically, there were in the present series one, possibly two, cases of prodromal delirium type.

Of the typical delirium concomitant with fever, the present series includes twelve. Of these patients, seven died. In one instance the fever abated two weeks before death.

Of the postfebrile deliria there were three, one of which was fatal. In one of the other two the delirium lasted two weeks.

Any general hospital could probably furnish more examples of all of these types than a psychopathic hospital. These cases are in a sense representative of the more severe forms of delirium.

Neurologic signs were not infrequently present. I am elsewhere reporting with Myerson an instance of severe bilateral optic neuritis which occurred in but one case, although all eye grounds were examined as a routine. One woman, aged 40, with typical delirium, presented absent pupillary and patellar reflexes, with muscular fibrillation. Several cases were noted with transient Argyll Robertson pupils. Convulsions were rare, occurring in only one case, and incidently in one fatal case in one of our nurses, not included in this series.

The spinal fluids were examined in most cases, and in only one instance was there any inexplicable change. This was a case of postfebrile delirium, with slight increase of albumin and globulin, and a mild midzone gold reading; Wassermann tests were negative. These negative findings do not coincide with the postmortem findings on spinal and cerebral fluids of patients dying of influenza, in which Southard and Canavan have found marked changes. (See note on Meningeal Reactions in Influenza, in preparation.)

Group II.—The patients who developed dementia praecox during or soon after an attack of influenza may de differentiated into three important groups. These are: (1) those with preexistent indications; (2) those with morbid family history, without previous tendency, and (3) those with neither. Of the first class there were, of course, two varieties: those with previous attacks of acute psychosis, dementia praecox episodes, and those who, without previous episodes, manifested a tendency to the seclusive, egocentricity, etc. In both of these types the acute psychotic episode seems to have been precipitated by the influenza, a process frequently mentioned in the literature, but by no means understood.

The patients in whose family history there appear pathologic elements — a psychotic father, a feebleminded brother, etc. — are separately grouped because of the possible contribution of these elements.

The group in which there was no previous indication, no evinced tendency and no morbid family history is certainly the most momentous group of this series. It is subdivided into those complicated by parturition, and those due solely to the influenza. In this group the influenza (and parturition) seemed to act by directly inducing a process for which there were no previous indications. There are as yet insufficient data to conclude that the infectious process may be the direct etiologic factor (perhaps via some such mechanism as Bonhoeffer proposes) of dementia praecox. Nevertheless the evidence which these cases constitute for the organic view of dementia praecox, as held by Alzheimer, Dide, Deny, Southard, Regis, Rosanoff and others, is of considerable weight. What effect it

6. Kraepelin, E.: Psychiatrie, Ed. 8.

will have on the view of "curable dementia praecox," of which only rumors have thus far reached us *ex bello*, no one can say.

The numerical frequency of the foregoing subdivisions of Group II appears in Table 7.

Group III.—This heterogeneous group includes cases of the usual psychoses which were precipitated in acute form by the influenza. This does not relate to their permanence, since forms of manic-depressive psychosis will likely all prove transient; of neurosyphilis, presumably permanent. All began during the defervescence of, or convalescence from, the influenza. The cases of neurosyphilis are included, as the others, because although it is indisputable that the neurosyphilitic process precedes the influenza, the symptoms were so exaggerated or the process so accelerated that for the first time the conduct of these patients became such that institutional care was considered necessary.

TABLE 7.—SUBDIVISIONS OF THE DEMENTIA PRAECOX GROUPS

With preexistent indications		9
Definite episodes	3	
Disposition only (including 1 parturient)	6	
With morbid family history (including 1 parturient)		4
With neither personal nor familial predilection		13
Influenza plus parturition	2	
Influenza (or pneumonia) alone	11	

An outline with the numerical frequency of each group appears in Table 8.

Group IV.—This group of cases of dubious diagnosis consists of sixteen cases. Of these, three were most likely postfebrile deliria; six were indistinguishable between postfebrile delirium and episodic dementia praecox; three, in my opinion, will likely prove to be dementia praecox, and five remain undiagnosticated because of unusual combinations of symptoms, insufficient data, etc.

The striking point in this group is the frequency of difficulty in distinguishing between postfebrile delirium and dementia praecox. There is not time here to dilate on this theme, or to recall the references to this difficulty made by the French authors who regard dementia praecox as essentially a toxic psychosis. It is sufficient to indicate that this fact, and the presence of schizophrenic symptoms in one third of the cases diagnosticated delirium, add considerable force to the

TABLE 8.—STATISTICAL ANALYSIS OF GROUP III

So-called "functional psychoses"		11
Cyclothymias	9	
Manic phase	5	
Depressed phase	3	
Mixed phase	1	
Psychoneurosis	1	
Paranoia (Kraepelinian)	1	
Recognized organic psychoses		12
Alcoholic psychoses	5	
Neurosyphilitic psychoses	5	
General paresis	4	
Diffuse form	1	
Arteriosclerotic psychoses	2	

suggestion made above from the statistics in Group II, concerning infectious processes as the possible etiology in some cases of dementia praecox.

Another classification of the diagnostic groups is suggested by the facts presented. The influenza acts in two ways: as an inciting factor for a process not previously manifest, and as an exciting factor for rendering visible a previously latent or semilatent process. Thus the cases of manic-depressive psychosis with first attack following influenza illustrate well the first tenet, and the augmentation of neurosyphilitic processes the second. Our knowledge concerning both methods is at present in a clouded state, and only much careful study of series of cases such as the present will elucidate the matter.

From such a point of view the cases of this series may be presented numerically as in Table 9.

TABLE 9.—NUMERICAL SUMMARY ACCORDING TO WAY INFLUENZA ACTED

Latent Processes Activated:		
Dementia praecox	8	
Manic-depressive psychosis	6	
Neurosyphilis	5	
Alcoholic psychoses	4	Total 32
Other psychoses	5	
Unclassified	4	
Processes Instigated:		
Delirium	16	
Dementia praecox	17	
Manic-depressive psychosis	3	Total 48
Other psychoses	0	
Unclassified	12	

COURSE

The course of the psychoses has in general been indicated in connection with the individual groups. The delirious patients either recover mentally and physically or die. Those diagnosticated as having dementia praecox are all alive at the present time except two, who died within the month. There have been no deaths in Groups III and IV. Necropsy results will appear later.

Statistically the present status and probable prognosis is represented in Table 10.

TABLE 10.—COURSE OF THE PSYCHOSES

Groups	I	II	III	IV
Transient	10	0	14	6
Interrupted by death	6	2	2	3
Permanent	0	23	7	7

SUMMARY AND CONCLUSIONS

1. One hundred cases of mental disease associated with influenza in the recent pandemic have been studied at the Boston Psychopathic Hospital. Eighty of these have been intensively analyzed.

2. The variety of mental disturbance manifested is wide, embracing in this series nine of Southard's eleven groups of mental disease. For convenience they are readily classifiable into four groups: delirium, dementia praecox, other psychoses and unclassified. Of these the second (dementia praecox) is the largest group numerically.

3. That age may be a factor in determining the form of psychosis evolved is suggested by an analysis of the average ages of the groups.

4. Analysis of the time relations proves that the duration of the influenzal attacks in the patients developing psychoses is not appreciably greater than the average as reported in the present epidemic, nor does the duration modify the form of psychosis developed.

5. There is in most instances an interval between the termination of the influenza and the first manifestation of symptoms of psychosis, the averages varying from two to eight days in all save the febrile deliria. Herein, Bonhoeffer's principle of the relation of interval and complexity of the psychoses is supported.

6. The symptomatology is as complex as the nosology. Delusions and hallucinations are the most common symptoms, and depression is relatively infrequent contrary to the case in mentally normal subjects.

7. The states of delirium encountered are best classified as of three forms, on a temporal basis: prefebrile delirium (prodromes), (cum-) febrile delirium, and postfebrile delirium (collapse delirium,

exhaustion delirium, confusion, etc.). This accounts for all cases and avoids ambiguity.

8. Neurologic signs were few; ophthalmoscopic examination negative, save for one instance of bilateral neuritis, and spinal fluid examination negative save for one instance of modified colloidal gold reaction.

9. An organic basis for some instances of the picture denoted dementia praecox is supported by the preeminent frequency of its occurrence in this series (31 per cent), the age factor above mentioned, the frequency of schizophrenic symptoms in otherwise typical cases of delirium, and the occurrence of several (six or more) cases in which a diagnosis could not be made between delirium and dementia praecox, despite the presence of all diagnostic aids.

10. The psychiatric prognosis in influenza justifiable on the basis of the present series may be expressed in general as delirium (with recovery), death or dementia praecox. This excludes cases of previous psychotic basis, such as alcohol and neurosyphilis.

ATROPIN AND INDUCED ANTI-ANAPHYLAXIS

AS A PROTECTION AGAINST ACUTE ARSPHENAMIN REACTIONS *

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The acute nitritoid or anaphylactic reaction to the intravenous injection of arsphenamin has become rather familiar to the profession through the peculiarities of certain brands of the drug that have of late years been placed on the market. In the management of a few cases, or in the treatment of young, robust persons, the average acute reaction may be an annoyance rather than a critical complication. None the less, it has resulted fatally, and in the enfeebled or in those with grave constitutional ailments it may give rise to alarming situations. There is also a type of patient who needs the drug, but who, instead of an occasional reaction, exhibits a persistent marked idiosyncrasy which subjects him to repeated anaphylactic storms with successive injections that may force an abandonment of this form of medication.

Heretofore, the means for the control of acute reactions due to the administration of arsphenamin have been confined to special care in the preparation of the patient (catharsis and empty stomach), caution in the alkalinization of arsphenamin solutions, and to the use of the epinephrin solution suggested by Milian[1] in from 5 to 10 minim doses as a means of controlling the reaction after it develops. Epinephrin may also be used as a prophylactic, as noted, for instance, by Berman.[2] This drug, however, administers a shock of no mean intensity by its powerful effect on the vascular system, so that I have seen occasions in which patients have for the moment seemed in as much risk of serious damage from the therapy as from the original arsphenamin reaction. The frequency of nitritoid crises during the period in which German-made arsphenamin and neo-arsphenamin were being supplied to this country by submarine furnished an incentive to the development of a less vigorous prophylaxis for the reaction, which could be relied on to make repeated injections possible even in the face of a marked idiosyncrasy on the part of the patient. It occurred to me that such a prophylaxis might be based on the clinical resemblance of the nitritoid crisis and the reaction produced by imperfectly alkalinized arsphenamin solution to anaphylactic shock. A physiologic means of combating anaphylactic shock, it seemed to me, might protect against acute nitritoid crisis, and at the same time have theoretical interest as an indirect demonstration of the true anaphylactic nature of the phenomenon. This seemed the more worth while because of the theory, recently advanced by Schamberg, Kolmer and Raiziss,[3] that the reaction was due to the physiologic effect of an impurity (substance X) rather than to anaphylaxis per se.

Support for the belief that the nitritoid crisis is a form of anaphylactic shock rests on more than mere clinical analogies. Swift[4] early undertook to explain the reaction as a form of shock by showing that guinea-pigs could be passively sensitized to a mixture of guinea-pig serum and arsphenamin, and would on subsequent injection develop a true anaphylactic response. Since, however, the older conception of anaphylaxis required that a previous sensitizing dose of the allergy-producing agent be administered, the explanation of Swift seemingly failed to cover those cases in man in which nitritoid crisis developed on first injection.

The development of the newer physical conceptions of the mechanism of anaphylactic shock, made possible by the work of Bezredka and Strobel,[5] Kopaczewski and Mutermilch,[6] Jobling and Petersen,[7] Novy and De Kruif[8] and numerous other investigators, has done away with the objection to Swift's explanation. One of the essential facts in the production of anaphylactic shock may now be regarded as a change in the dispersion of the colloids of the blood serum. An investigation which has special application to the problem of arsphenamin reaction in its relation to anaphylaxis is that of Friedberger and Tsuneoka,[9] who found that the injection of a powder, such as kaolin, into the blood stream, gives rise to anaphylactic shock. MacKee,[10] among others, observed in 1912 that the intravenous injection of arsphenamin in acid solution produced a precipitate, and a reaction in the patient proportional to the concentration of the solution and the rate of injection, that is, the rate of formation of the precipitate in the blood stream.

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* From the Section of Dermatology and Syphilology, Mayo Clinic.

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2. Berman, L.: The Nitritoid Crises after Arsphenamin Injections, Arch. Int. Med. **22**: 217-223 (Aug.) 1918.

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5. Bezredka, A., and Strobel, H.: De l'anaphylatoxine typhique, Compt. rend. Soc. de biol. **71**: 413-415, 1911.

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7. Jobling, J. W., and Petersen, W.: The Mechanism of Antiphylatoxin Formation; Studies on Ferment Action, XV, J. Exper. Med. **20**: 37-51, 1914.

8. Novy, F. G., and DeKruif, P. H.: IX, Specific Anaphylactic Shock, J. Infect. Dis. **20**: 776-832, 1917.

9. Friedberger, E., and Tsuneoka, R.: Weitere Beiträge zur Wirkungsweise des Kaolins und anderer chemisch indifferenter und unlöslicher anorganischer kolloidaler Substanzen, Ztschr. f. Immunitätsforsch. u. exper. Therap. **20**: 405-416.

10. MacKee, G. M.: A Study of the Blood after Intravenous Injections of Salvarsan, J. Cutan. Dis. **30**: 199-206, 1912; A Comparison of the Results Obtained by the Intravenous Administration of Acid and Alkaline Solutions of Salvarsan: A Preliminary Report, New York M. J. **94**: 825-832, 1911.

The application of MacKee's observation, which has been repeatedly confirmed by subsequent observations on the toxicity of acid and partially alkalinized solutions of arsphenamin, to the problem of arsphenamin anaphylaxis, may be made by way of Friedberger and Tsuneoka's demonstration of the effect of fine precipitates in the blood stream. Thus interpreted, the reaction to acid and imperfectly alkalinized arsphenamin is anaphylactic shock due to the formation of a precipitate in the blood. Reasoning by analogy, the closely similar picture of nitritoid crisis may be anaphylactic shock produced by the formation of a precipitate in the blood.

The demonstration of the correctness of this reasoning has recently been accomplished by the work of Danysz,[11] and of Berman. Danysz has shown that the arsphenamin solution is essentially colloidal, and that on its injection, the arsphenamin base is precipitated out by the constituents of the blood plasma, and then formed again into soluble organic derivatives. The rate of this precipitation is dependent to some extent on the alkalinity of the solution, and on the peculiarities of the individual blood plasma. If the solution is imperfectly alkalinized or if the serum of the patient is abnormal, rapid precipitation followed by acute reaction ensues. This observation links together the reaction to acid solutions of arsphenamin and the nitritoid crisis. Berman has recently shown that even with a properly prepared solution, precipitation occurs in the serum of hypersensitive patients. He differs from Danysz, however, in believing that this precipitation involves the proteins of the serum rather than the arsphenamin base. He believes, further, that a tendency to nitritoid crisis can be predicted by testing the serum of a patient with a solution of arsphenamin before the injection is given.

The question as to whether the entire phenomenon of allergic reaction to arsphenamin may be explained either by insufficient alkalinization of the solution or by peculiarities in the patient's blood serum can certainly not be regarded as completely settled. There remains to be explained the large body of observation on variations in the toxicity of arsphenamin itself. The proposal of Schamberg and his collaborators that there is a factor in the preparation of arsphenamin, an impurity of as yet unknown constitution, present in the drug, is not at all incompatible with an allergic explanation of the reaction. It is conceivable that it is not the arsphenamin base alone which precipitates, but the serum proteins as well, and that this precipitation of the serum proteins may be accomplished with especial ease even in comparatively normal persons, by a substance present as an impurity in the drug. No other satisfactory explanation can be found, to my mind, for the extreme frequency of reaction to certain brands of the drug, and its extreme rarity under identical technical conditions, in others. On my own service, in which the operators and the technic of operation remain unchanged for months and even years at a time, there can be no other satisfactory explanation for the fact that during 5,000 injections in which German preparations were used there were considerable periods when scarcely a day passed without a nitritoid crisis, while in 7,000 subsequent injections in which arsenobenzol-Policlinic and novarsenobenzol-Billon have been employed, the nitritoid crisis has become so rare that we have been compelled to all but abandon the work necessary to confirm the results presented in this paper. We have, moreover, had the opportunity to observe the production of crisis by an accurately alkalinized but evidently impure preparation used on the assurance of the manufacturers, in every one of five successive patients known not to present any personal idiosyncrasy to the drug. There can be little doubt in the minds of large users of arsphenamin that there is a factor of toxicity and a tendency to the production of anaphylactic response in certain preparations which cannot be explained in absolutely general terms, and is probably due to specific impurities.

My own attempt to devise a protection against acute arsphenamin reaction, and incidentally to support the view that the phenomenon was a manifestation of anaphylactic shock, consisted (1) in an attempt to employ the well-known inhibitory effect of atropin, recently experimentally demonstrated, for example, by Pelz and Jackson[12] in the dog, and (2) in an effort to induce antianaphylaxis to the drug according to the methods of Bezredka and Steinhardt.[13] It should be noted that Swift had suggested the possibility of antianaphylaxis on the basis of a casual observation that if a nitritoid crisis set in, and the injection was stopped, it could sometimes be resumed again in ten minutes without further ill effect. Work of this kind in patients can be undertaken with an expectation of trustworthy results only when the idiosyncrasy for arsphenamin is so definite and persistent that it is possible to exclude the factors of imperfect alkalinization, variations in the chemical composition of the drug as marketed, variations in the patients' individual state of health, and neurotic and hysterical factors. The number of patients meeting such control requirements is necessarily small, so that in a series of 12,000 injections it has been possible to employ the procedures described, with confidence in the results, in only about a dozen cases. The first case in which the method was employed is typical of the response in the entire series, and is here summarized. It should be noted that in this case neo-arsphenamin was used, thus eliminating the question of proper alkalinization of the solution, so important in judging of a reaction to arsphenamin.

REPORT OF CASE

The patient was a rather stolid Swedish girl who took her idiosyncrasy in a very matter-of-fact manner. She was under treatment for a florid follicular secondary syphilid. Following her initial intravenous injection of neo-arsphenamin she exhibited a rather sharp Jarisch-Herxheimer reaction in spite of a moderate dose. The second injection at the end of a week was without reaction. After the third she developed a marked, unexplained rise of temperature. The interval between the third and fourth injections was then lengthened to two weeks, and the fourth injection passed without event. Following the fifth injection she again developed a marked rise of temperature and vomited. No further injections were given for six weeks. During her first course, then, this patient had shown gradually increasing evidence of intolerance of neo-arsphenamin.

11. Danysz, J.: Les propriétés physicochimiques des produits du groupe des arsénobenzénes leurs transformations dans l'organisme (premier mémoir), Ann. de l'Inst. Pasteur **21**: 114-137, 1917.

12. Pelz, M. D., and Jackson, D. E.: An Investigation of Certain Phenomena of Allergy With Special Reference to the Respiratory and Circulatory Systems in Relation to the Cause of Death, J. Lab. & Clin. Med. **3**: 387-396, 1918.

13. Bezredka, A., and Steinhardt, Edna: Du mécanisme de l'anti-anaphylaxie, Ann. de l'Inst. Pasteur **21**: 384-391, 1907; De l'anaphylaxie et de l'anti-anaphylaxie, vis-a-vis du serum de cheval, ibid. **21**: 117-127, 1907.

The first injection of the second course marked the beginning of her nitritoid crises. Two minutes after the injection of 0.3 gm. of neo-arsphenamin in concentrated solution by the method of Ravaut, she developed on the table the characteristic intense scarlet flush with edema of the face and neck, cough, stridor, asthmatic breathing, prostration and vomiting. She recovered rapidly following a subcutaneous injection of 10 minims of a 1:1,000 solution of epinephrin.

On the next injection, one week later, the first attempt to protect the patient with atropin was made, a dose of $\frac{1}{50}$ grain being given hypodermically fifteen minutes before the injection of neo-arsphenamin. The dose of neo-arsphenamin was 0.6 gm., double that of the preceding injection, and was given by the same technic. Only a very slight reaction occurred. There was no flush or pulmonary disturbance. The patient vomited once on returning to her room.

On the third injection, one week after the second, the dose of neo-arsphenamin was increased to 0.7 gm., the dosage of atropin and the time interval being identical with that on the preceding occasion. This time the reaction was all but negligible, although the patient tasted and smelled the drug and was distinctly nauseated.

The fourth injection was given one week after the third, the dose of neo-arsphenamin again being 0.7 gm. On this occasion, through a misunderstanding, the patient received only $\frac{1}{150}$ grain of atropin subcutaneously. That this dose was insufficient was promptly demonstrated by the occurrence of a crisis on the table, with marked flushing, edema and vomiting.

Just preceding the fifth injection, also through a misunderstanding on the part of an assistant as to the size of the dose of atropin, the patient received $\frac{1}{75}$ grain of atropin subcutaneously. The injection of neo-arsphenamin, 0.6 gm., which followed, caused a mild reaction, with flushing and vomiting.

So strongly did the efficiency of atropin in proper dosage suggest the anaphylactic nature of the reaction, that it was decided to attempt the production of anti-anaphylaxis in this case. Accordingly, one hour before the administration of the next injection of neo-arsphenamin, the patient was given 0.05 gm. of the drug in 0.5 c.c. of water, intravenously. The neo-arsphenamin used was of the same control number as that employed for the previous injection, which had shown itself capable of producing marked reaction in this patient (Control V U J). Following the injection of the half decigram dose, the patient became slightly dizzy and was a trifle nauseated on returning to bed. One hour after the preliminary injection the patient received 0.55 gm. of neo-arsphenamin intravenously in concentrated solution, injected at the usual rate. The complete inhibition of all reaction was striking. There was no flush, no nausea nor vomiting, no dizziness, cough nor stridor. The eyes became slightly suffused. The patient felt so much better than usual as to astonish her and all those who knew of her reactions. She was returned to her room, and no reaction was reported for twenty-four hours. At the end of this time, without rise of temperature or any other marked systemic symptoms, a generalized macular erythema of the typical late toxic type appeared. It was not accompanied by constitutional symptoms and disappeared two or three days later. It was judged wise, however, not to invite an exfoliative dermatitis by any further arsenotherapy.

COMMENT

This case was surrounded by all the precautions against pseudoreaction that we could devise. The reactions observed were typical of the acute nitritoid crisis and we felt that the sequence of events, as described, had not been modified by presuppositions on the part of the patient or by hysterical manifestations. Abundant objective evidence of the patient's intolerance was available. Not the least interesting suggestion based on these observation is the possibility that the acute anaphylaxis and the delayed toxic erythema are different types of reaction. An anti-anaphylaxis which was developed to protect the patient against the former failed to protect against the latter complication. The influence of atropin seemed to be quite definitely a function of the dosage, and doses below $\frac{1}{50}$ grain failed to protect the patient against shock. It is to be regretted that circumstances made it impossible to transfer the problem from the patient to experimental animals for a more thorough study.

Since its successful employment in the case described, we have resorted a number of times to the induction of antianaphylaxis as a protection against acute arsphenamin reaction, notably in the treatment of patients with tuberculids, who show an idiosyncrasy in about 50 per cent. of the cases. I have noted with interest Danysz' impression, which my experience confirms, that small preliminary injections "vaccinate" the susceptible patient, so to speak, against the larger doses, an observation which Danysz supports by animal experiment, and offers likewise as a rationale for the regulation of dosage in treatment, and a means for increasing individual tolerance of the drug.

SUMMARY

1. The acute "nitritoid" crisis or reaction to arsphenamin is a form of anaphylactic shock, explainable on physicochemical grounds as the result of a precipitation either of the drug from its colloidal solution, or of the colloids of the blood plasma, by the drug, or by an impurity. The reaction following the injection of an acid or only partially alkalinized solution of arsphenamin either too rapidly or in too high concentration is presumably of the same type.

2. The nitritoid crisis can apparently be inhibited by a previous injection of atropin ($\frac{1}{50}$ grain), which further suggests that the reaction is a form of anaphylactic shock.

3. The induction of antianaphylaxis as described above further supports the belief that the nitritoid crisis is a form of anaphylactic shock.

4. The induction of antianaphylaxis in patients exhibiting persistent idiosyncrasy to arsphenamin or neo-arsphenamin has proved clinically useful, and, as a means of increasing their tolerance of the drug, deserves further trial and study.

Universal Compulsory Insurance Against Tuberculosis.—Dr. P. J. Ménard outlines in the *Presse médicale*, Nov. 25, 1918, a plan for universal compulsory insurance against tuberculosis, the funds from which would serve for the fight against tuberculosis. His scheme is something like the German compulsory social insurance against sickness, but the tax or insurance dues imposed would include all classes of society, not merely the wage earners. He protests that the fight against tuberculosis should not be left to charity or private initiative, but should be as much a matter of course as the tax on land, and the person contracting tuberculosis, whatever his social standing, should be compelled to do everything necessary to aid in throwing it off, with all the financial aid needed for this, and without his feeling that charity is being doled out to him. The fight against tuberculosis, Ménard reiterates, is first and foremost a question of money. It requires a permanent organization with a stable and automatic income, such as a per capita tax would supply. The money thus provided could be loaned to towns and provinces wishing to erect preventoriums, sanatoriums, hospitals, etc., for the tuberculous. Germany, he states, had nearly a third of the capital of its sickness insurance societies thus loaned out, a total of 365,920,290 marks, about $91,230,000. There are thirty-one regional and nine occupational sickness insurance societies, and they collect the dues under state supervision. The wage earners and the employers pay an equal sum weekly, totaling from 14 to 36 pfennigs, and the state adds a certain amount to this, but the dues and benefits are restricted to wage earners.

VENTRICULAR DRAINAGE BY PUNCTURE OF THE CORPUS CALLOSUM

IN ACUTE OBSTRUCTIVE HYDROCEPHALUS DUE TO EPIDEMIC CEREBROSPINAL MENINGITIS

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It has long been known that in the course of an epidemic cerebrospinal meningitis an obstructive hydrocephalus may develop, either acutely at the height of the disease, or as a sequel after the subsidence of the acute symptoms. This was observed clinically and verified by necropsy as far back as 1865, when Ziemssen and Hess[1] published the first reports. These observations were confirmed by Hart[2] and Heubner.[3] The cases were all fatal, and the main interest in the subject was from the pathologic standpoint.

Not until 1907, when Koplik[4] revived the discussion of the question, was there any suggestion that direct therapy might be efficacious. He made the symptoms pointing to internal hydrocephalus, namely, headache, vomiting, unconsciousness and convulsions, and Macewen's sign, the indications for the treatment of the meningitis by repeated lumbar puncture to drain the ventricles. His cases were all in children, and he laid stress on the remitting type of the symptoms when this complication developed.

The following year, Cushing and Sladen[5] reported a successful case of intraventricular injection of antimeningitis serum in a child of 6 months in which *Diplococcus intracellularis* was found in the ventricular fluid, but not by lumbar puncture. They also refer to a case of puncture of the lateral ventricles by Sowers in an adult with great improvement for eight days. The choked disks and headaches subsided, consciousness was regained, and the temperature returned to normal; but the patient died suddenly and unexpectedly, and postmortem examination revealed a thick membrane closing the outlets of the ventricular fluid in the neighborhood of the fourth ventricle. The lateral ventricles were distended and contained a purulent fluid, while the ependyma showed a granular inflammation. They suggest that in certain other instances of ventricular obstruction in the acute stages of the disease, even in adults, ventricular puncture might be advisable, and if organisms are present in the ventricular fluid, serum might be administered directly into the ventricles. Fischer,[6] in 1910, reported a similar case with recovery, and likewise emphasized the intraventricular injection of the antimeningitis serum. The lumbar tap in this case was dry; the ventricular tap showed clear fluid and no diplococci.

About this time a considerable interest in the subject developed among the French under the leadership of Netter[7] and Chiray.[8] Intraventricular puncture was advocated and repeatedly attempted, especially in infants, and intraventricular serotherapy tried. With only an occasional exception, the results were not very encouraging. Again less emphasis was laid on the relief of intraventricular pressure than on the administration of serum directly into the ventricles. A successful case in an infant is credited to Triboulet, Rolland and Fenestre,[9] another to Bouché,[10] and one in an adult to de Verbizier and Chauvel.[11] In Germany, Levy[12] reported a cure in an infant aged 3½ months. So-called superior vertebral puncture with intraspinal injection of antimeningitis serum in the cervical region was also discussed by the French school (Cantas,[13], Ravaut and Kronulitzky[14]), but apparently did not arouse much enthusiasm.

The next attempt in the operative treatment of meningitis was made by Haynes,[15] who suggested the drainage of the cisterna magna, but apparently with no practical success. Within the last few years Westenhöfer and Mühsam[16] again attempted lateral ventricle puncture and reported one case of improvement after withdrawing 15 c.c. from the ventricle in a case of acute encephalomyelitis in a girl, aged 17 years. She eventually recovered completely, except for weakness in the right arm. Two other cases are also mentioned in which puncture for meningococcic hydrocephalus was performed. These patients were relieved, but eventually died. In one of the cases, a cerebral hemorrhage, possibly due to the puncture needle, was found at necropsy and is offered as an explanation of the fatal outcome.

Last year Korteweg[17] evacuated and washed out the ventricles with Ringer's solution in a case of pyocephalus in an 8-months-old child with relief, but eventful death. In another case ventriculolumbar rinsing was tried, and when the communication was found to be interrupted, repeated ventricular puncture apparently brought about a cure.

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8. Chiray: La pyocéphalie cause d'insuccès dans le traitement sérothérapique de la méningite à méningocoque, Presse méd. **23**: 481, 1915.
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12. Levy, E.: Die Behandlung der epidemischen Genickstarre durch Seruminjektionen in die Seitenventrikel: Bericht über einen geheilten Fall, Arch. d. Kinderh. **59**: 72, 1913.
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15. Haynes, I. S.: The Surgical Treatment of Meningitis: Its Scope and Accomplishment, Laryngoscope **22**: 865, 1912.
16. Westenhöfer, M., and Mühsam, R.: Die Behandlung der Meningitis und des chronischen Pyo- und Hydrocephalus durch Okzipitalinzision und Unterhornpunktion und-Drainage, Deutsch. med. Wchnschr. **42**: 1574, 1916.
17. Korteweg, R.: Epidemische meningitis bij jonge kinderen, Nederl. Tijd. v. Geneesk. **61**: 1340, 1917.

In 1917, Flexner[18] presented a summary of the entire meningitis problem, prepared especially for the medical officers in the service. In it he referred to the possibility of an internal hydrocephalus developing in the course of the disease from obstruction of the ventricular outlet. He considers it a not infrequent complication and its recognition of great importance, particularly from the standpoint of serum therapy. He advocates intraventricular injection of antimeningitis serum in these cases, since the serum will not reach the ventricles, which are usually infected under such conditions, by means of lumbar puncture.

In the early part of 1918, Hoch[19] reported a case of cerebrospinal meningitis successfully treated by intraspinal and intraventricular administration of antimeningitis serum, but again the most stress is laid on the efficacy of the serum.

Herrick,[20] in a recent contribution on the subject of meningitis, recognizes the possibility of the blocking of the ventricles. He questions, however, the utility of ventricular puncture, and considers its effect brief and the operation serious. He advocates, in its stead, a method, suggested by one of his assistants, Cobb. This is merely an attempt to break up the adhesions around the foramen magnum and fourth ventricle by manipulations of the head under chloroform.

In the majority of the foregoing observations the dominating note is the extension of the infection by *Diplococcus intracellularis* into the ventricles. This is followed by the formation of a pyocephalus, or at least a distention of the ventricles by a turbid, if not a purulent fluid. The blocking of the ventricles does not seem a vital feature of the pathology, and the treatment advocated is less the drainage of the overfilled ventricle than the intraventricular administration of the specific serum. We believe that, while this type of case is a not infrequent complication of epidemic cerebrospinal meningitis, there is a second, closely allied form, in which the question of actual infection of the ventricles plays a minor, unimportant rôle. In fact, the primary infective process may have largely ceased and the ventricles may be absolutely free from infection while the essential picture is one of acute internal hydrocephalus due to ventricular obstruction and secretion of fluid from the ependyma. If such a condition develops, intraventricular serotherapy is less important than definite, and to a certain extent, permanent ventricular drainage.

Clinically, these cases of ventricular blocking are more or less characteristic. At about the end of the first week of the disease, the spinal symptoms, which had been marked, become less striking, or may even almost entirely disappear. The patient seems to be improving, when suddenly the cerebral symptoms surge into the foreground. The temperature may be irregular, but is not infrequently normal. The pulse becomes relatively slower. The headache becomes more intense—so unbearable that hypnotics in large doses must be given to keep the patient quiet. Vomiting is not infrequent. Convulsions, delirium, loss of consciousness and stupor develop. There is incontinence of urine and feces. The optic disks show definite evidence of choking. In fact, everything points to a rapidly increasing intracranial, or rather intraventricular pressure. The symptoms are characteristically intermittent. A very striking feature of this stage of the disease is the absence of relief by lumbar puncture, which up to this point may have brought about a decided amelioration in the symptoms. The flow on lumbar puncture shows a noticeable fall in pressure, which may have been rather high previously. The fluid may become clear after having been turbid or purulent, or only a few drops of viscid fluid may be obtained. Coughing and straining do not increase the flow as before. In fact, it is not uncommon for a tap to be absolutely dry after repeated positive, high pressure tappings. The usual outcome in this type of case is a fatal one, and death is not so much the result of infection as of the sudden, acute increase in intraventricular pressure. For some reason or other this acute involvement of the ventricles is particularly ominous. The ventricles tolerate poorly both infection and sudden distention. It is a common observation in brain surgery, though not one that has been satisfactorily explained, that the rupture of a brain abscess or a hemorrhage into a ventricle leads almost invariably to a rapidly fatal termination. The progress of the internal hydrocephalus may be arrested before a fatal point is reached, and the brain may adapt itself to the increased tension; but certain serious, permanent sequelae are sure to be left. These include mental deterioration, optic atrophy, deafness, paralysis of the motor cranial nerves, contractures and spastic paralyses of the extremities, epilepsy, etc. The explanation of this pathologic phenomenon is unquestionably the distention of the lateral ventricles as a result of the closure of the foramen of Magendie and the foramina of Luschka by inflammatory exudate over the roof of the fourth ventricle and an interruption of the communication between the ventricles and subarachnoid space. As Dandy and Blackfan[21] have so clearly shown in their contributions on the subject of hydrocephalus, and as postmortem examinations have repeatedly demonstrated, closure of these foramina is the frequent cause of the so-called obstructive variety of the disease. Forster and Gaskell,[22] in their monograph on cerebrospinal fever, also recognize the pathology of this condition and speak hopefully of surgical therapy.

If this view is correct, it is perfectly obvious that lumbar puncture, superior vertebral puncture or drainage of the cisterna magna is utterly futile therapy in this type of case. Simple ventricular puncture through the cerebral substance is totally inadequate except as a means of giving temporary relief. The puncture wound closes immediately on withdrawal of the needle. Mere subtemporal decompression would not relieve the peculiarly dangerous, acute, increased intraventricular tension. The one logical procedure would be a typical puncture of the corpus callosum. Von Bramann, who originally suggested this operation, seems to have overlooked its possibilities in the class of cases we are considering. He used the callosal puncture in almost every other variety of

18. Flexner, Simon: Mode of Infection, Means of Prevention, and Specific Treatment of Epidemic Meningitis, J. A. M. A. **69**: 639 (Aug. 25) 1917; 721 (Sept. 1); 817 (Sept. 8); Rockefeller Institute for Medical Research, New York, 1917.

19. Hoch, T. A.: A Case of Cerebrospinal Meningitis Successfully Treated by Intraspinal and Intraventricular Administration of Antimeningitis Serum, Boston M. & S. J. **178**: 327, 1918.

20. Herrick, W. W.: The Intravenous Serum Treatment of Epidemic Cerebrospinal Meningitis, Arch. Int. Med. **21**: 541 (April) 1918.

21. Dandy, W. E., and Blackfan, K. D.: Internal Hydrocephalus, Am. J. Dis. Child. **8**: 406 (Dec.) 1914; **14**: 424 (Dec.) 1917.

22. Forster, Michael, and Gaskell, J. F.: Cerebro-Spinal Fever, Cambridge, 1916.

increased intracranial tension, but apparently never had the opportunity of using it in the acute ventricular block of cerebrospinal meningitis.

When the operation is performed, a rather wide opening should be made in the corpus callosum by gently moving the cannula. This opening is said to have the tendency to remain patent, and a new, more or less permanent communication is established between the ventricular cavity and the subarachnoid space. Surely this is probable as long as the normal outlets are clogged and as long as the intraventricular pressure is increased. Perhaps the callosal puncture may close after the exudate over the fourth ventricle has been absorbed and the foramina have reopened; but that is quite immaterial, as its object has been accomplished. In fact, as Flexner has suggested, the block in certain instances may not be due to an actual organic obstruction, "but merely to a functional lack of mechanical resistance which permits distention of the ventricles under moderate pressure, eventuating possibly in temporary obliteration of the outlets of the fourth ventricle by weight of the dilated lower horns which press the cerebellum down against the medulla." Under such conditions, a vicious circle would be established—the more distention of the ventricles the tighter the closure, and the tighter the foramina are closed, the more the ventricles will distend. In these functional cases, puncture of the corpus callosum would deliberately break the vicious circle.

We believe that this procedure is life saving in certain cases that would otherwise be hopeless. We also believe that in the nonfatal cases the distressing sequelae of hydrocephalus might be avoided by relieving the ventricular distention sufficiently early. Further, puncture of the corpus callosum is an operation of no great difficulty or magnitude, and can be performed without damaging any really essential structures of the brain. The contention that the injury to the association fibers produces an apraxia is not substantiated by practical experience.

The report of a case is submitted to illustrate our argument:

April 1, 1918, a soldier, aged 19 years, white, admitted to the meningitis ward of U. S. Army General Hospital No. 1, had been sick twenty-four hours, complaining of severe headache, stiffness and pain in the neck, nausea and vomiting. The patient's temperature was 101 F., the pulse 60. On admission, 30 c.c. of turbid fluid under moderately increased tension were drawn off by lumbar puncture, and 20 c.c. of antimeningitis serum were given intraspinally. Examination of the cerebrospinal fluid revealed approximately 2,200 cells per cubic millimeter, mainly polymorphonuclears, and the smear showed a gram-negative diplococcus. The family and the past personal history were negative. The patient appeared moderately ill, but he was mentally clear, and able to sit up and even walk. The pupils were equal, moderately contracted, but responded promptly to light and accommodation. There was no nystagmus. There was slight herpes labialis. The neck was rigid. There was a well marked bilateral Kernig. There was a definite tache cérébrale. There was no involvement of the cranial nerves. There was no Babinski reflex, but the patellar reflexes were slightly exaggerated.

April 2, the patient still complained of severe headache. There was no change in his physical signs. Thirty-five c.c. of antimeningitis serum were given intraspinally. Examination of the spinal fluid revealed 3,600 cells per cubic millimeter, and no organisms nor growth.

April 3, the patient appeared improved; 20 c.c. of antimeningitis serum were given intraspinally. The spinal fluid showed 2,500 cells per cubic millimeter and no organisms.

April 4, 20 c.c. of antimeningitis serum were given intraspinally. Herpes labialis was well marked. There were 400 cells per cubic millimeter in the spinal fluid.

April 5, 35 c.c. of antimeningitis serum were given intraspinally. The patient appeared more comfortable. There were 480 cells per cubic millimeter and no organisms.

April 6, 25 c.c. of antimeningitis serum were given intraspinally. The spinal fluid contained 900 cells per cubic millimeter, with no organisms. There was a faint systolic murmur at the apex.

April 7, the patient had little headache and only slight rigidity of the neck; but Kernig's sign was still marked. There were no cranial nerves involved. On lumbar puncture, 25 c.c. of clear, straw colored fluid were removed containing 210 cells per cubic millimeter, and 20 c.c. of antimeningitis serum were introduced. The temperature was 103.6 F., the pulse 72.

April 8, the temperature ranged from 100.2 to 104 F.; the pulse remained about 72. The patient complained of slight headache and general pains. Herpes labialis was less marked. The rigidity of the neck was not so great. There was a sinus arrhythmia. There were no cardiac murmurs. On lumbar puncture, 40 c.c. of clear, light colored fluid under considerable pressure were withdrawn, and 30 c.c. of antimeningitis serum were introduced. At 2:30 p. m., examination of the fundi revealed slight marginal blurring of both optic disks and moderate enlargement of the retinal veins. A diagnosis of beginning papillitis was made. At 3:30 p. m., the patient developed a very severe headache necessitating the use of 0.03 gm. of morphin. Fifty c.c. of antimeningitis serum were given intravenously.

April 9, at 9 a. m., the headache was less severe, but the rigidity of the neck was very definite. The Kernig sign was about 20 degrees on the right and about 45 degrees on the left side. The knee jerks were diminished. There was no Babinski reflex. At 11:30 a. m., lumbar puncture was performed and 70 c.c. of clear, light colored fluid were obtained and 60 c.c. of antimeningitis serum introduced. The patient had a chill, but the headache became less severe. At 5 p. m., he complained of very severe headache. Lumbar puncture was performed, and 80 c.c. of somewhat cloudy fluid under considerable pressure were withdrawn. At 8 p. m., the patient developed a weakness in the right external rectus, which soon became well marked. The blurring of the disk margins was less noticeable. There was no evidence of involvement of any of the other cranial nerves.

April 10, the general condition was somewhat improved. There were no changes in the physical signs. Sixty-five c.c. of fairly clear fluid were removed by lumbar puncture and 55 c.c. of antimeningitis serum introduced. At 4:45 p. m., the patient complained of a very severe headache and became markedly delirious. The paralysis of the right external rectus was very definite, and the facial muscles of the right side, including the frontalis, were paretic. There was a rough twitching of the muscles of the extremities. The patient yelled every few minutes and sang occasionally. At 6:30 p. m., he had two convulsions about fifteen minutes apart. They involved principally the left side of the face, and there was a conjugate deviation of the head and eyes to the left. He foamed at the mouth and had involuntary passage of feces and urine. At 8 p. m. a lumbar puncture was performed, and 40 c.c. of cloudy fluid were withdrawn. The pressure was very slight as compared with that of the morning. Coughing and straining did not increase the flow, as they had previously done. The temperature was 99 F., the pulse 58. The condition of the patient was extremely critical. Based on previous similar observations, it was concluded (Major Roberts) that the patient was definitely suffering from an acute obstructive hydrocephalus as a result of blocking of the ventricles, and that he should be given some form of surgical relief. A consultation resulted in the decision by one of us (Major Stetten) that the only logical and correct procedure was deliberately to establish ventricular drainage by a puncture of the corpus callosum. This was agreed on.

At 11:50 p. m., the patient was brought into the operating room in a raving delirium. The operation was performed

under ether anesthesia (Major Stetten). A trephine opening about 2 cm. in diameter just to the right of the median line and about 1.5 cm. behind the coronal suture was made by means of a Hudson drill and rongeur. A dural flap was formed and the brain was found to be under considerable tension, although there was no evidence of inflammation of the membranes at the convexity of the cerebrum. A blunt, curved, callosal puncture cannula was introduced along the falx cerebri through the median fissure into the right ventricle, and about 25 c.c. of very slightly turbid, blood-stained fluid gushed out. It was decidedly different in character from that last withdrawn by lumbar puncture. The way the fluid flowed through the cannula suggested the manner in which the urine runs through a catheter when the bladder is distended. The opening in the corpus callosum was enlarged by gently moving the end of the cannula. No antimeningitis serum was introduced into the ventricles, as the fluid was not sufficiently purulent. The dura was closed with a chromicized catgut suture. The skin was closed with silkworm gut and a small rubber tissue drain inserted subcutaneously. Examination of the fluid showed it to contain very numerous leukocytes, about 75 per cent. polymorphonuclear. The cells were so clumped that a count was impossible. The culture was negative after seventy-two hours. No organism was found in the smears.

April 11, the patient was semiconscious and perfectly quiet. There was a right peripheral facial palsy. The neck was rigid, and there was difficulty in swallowing. There was no Babinski reflex. Toward evening the patient complained of severe headache and remained confused. The temperature remained low. The general impression was one of improvement.

April 12, the patient had regained consciousness. There was a decided change for the better. There was now a slight paresis on the left side of the face. The right external rectus was still weak, and there was a suggestion of a Babinski reflex on the left side. There was a serum rash on the extremities.

April 13, the patient stated that he ached all over; but he looked much brighter. The pulse was 110 and dicrotic. The finger nails were cyanosed. The paresis of the left external rectus was apparent. In the afternoon a lumbar puncture was performed and about 8 c.c. of blood-tinged fluid obtained, which came drop by drop. There was a rise of temperature to 101.5 F.

April 14, the patient had made considerable improvement, but still complained of slight headache. He was entirely conscious. The sixth and seventh nerve palsies were less marked, and there was a slight amount of blood in the stools.

April 16, the patient was making a gradual recovery, which had been slightly delayed by a febrile reaction with a maculopapular rash starting on the extremities and extending over the trunk, followed on some portions of the body by slowly fading petechiae, probably anaphylactic phenomena. As the condition of the patient improved, the primary bulging at the cranial defect gradually subsided. About two weeks after operation, there was an actual depression. The wound healed by primary union. The facial and left external rectus palsies disappeared rapidly, and the right external rectus paralysis was gradually disappearing.

May 5, the patient was allowed up for the first time.

May 14, eye examination revealed a slightly larger left pupil and a moderate convergence of the right eye. The pupils reacted normally to light and accommodation. Vision was 20/20 in both eyes. Both fundi were normal, and the optic disks were of good color and well outlined. The function of the right external rectus was returning, and at present represented a power of external rotation of about 15 degrees. The visual fields were normal.

May 18, the patient had been up for two weeks, and the temperature had been normal for three weeks. He was sent on furlough to his home.

A recent inquiry has elicited the information (October 2) that he returned to duty about August 1. His only complaint had been pain in his legs, which has gradually subsided. He has been riding a motorcycle and is now going in for football. The right external rectus has entirely recovered its function, and his mental and physical condition is in no wise impaired. He is anxious to go overseas, but he has been put in the domestic service class, presumably on account of the cranial defect.

SUMMARY

In the foregoing we find that a case of epidemic cerebrospinal meningitis, which had been running a relatively normal course, rather suddenly develops signs and symptoms pointing to an acute obstructive hydrocephalus. The patient rapidly goes into a condition that is little short of moribund, and a puncture of the corpus callosum to establish ventricular drainage is deliberately decided on and performed. The fact that the fluid from the ventricles was entirely different in character from the last fluid by lumbar puncture, and the manner in which the fluid gushed from the cannula, proved conclusively that the diagnosis of ventricular block was verified. Examination of the ventricular fluid showed no evidence of active meningococcic inflammation within the ventricles. The immediate postoperative improvement in the patient was almost miraculous, and is hard to realize by one who did not actually observe the change. The subsidence of the protruding intracranial centents shortly after operation, as the patient's condition improved, corroborated the view that the recovery, which eventually became complete, was due to the relief of the ventricular distention. We feel that we are justified in advocating puncture of the corpus callosum for ventricular drainage as a rational, life-saving procedure when the clinical picture of ventricular obstruction, described and illustrated above, appears in the course of a cerebrospinal meningitis.

In such cases, when, in addition to ventricular blocking, there appears to be an actual infection of the ventricle, that is, when the ventricular fluid is turbid or frankly purulent, or when diplococci are found in the smear, intraventricular administration of antimeningitis serum should be combined with puncture of the corpus callosum. Care must be observed to inject less serum into the ventricles than the amount of fluid withdrawn.[23]

23. In addition to the references already given, the following will be found of interest:

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Neveu-Lemaire, Debeyre, and Rouvière: Forme prolongée de méningite cérébro-spinale et trépanation cérébrale, Compt. rend. hebd. d. séances de l'Acad. d. sc. **162**: 885, 1916.

Ramond, Felix: La méningo-épendymite et sur traitement par la trépano-ponction, Bull. et mém. Soc. méd. de hôp. de Paris Series 3, **40**: 354, 1916.

Von Ziemssen, H.: Meningitis cerebro-spinalis epidemica, Handbuch der acuten Infectionskrankheiten, Leipzig Part II, **2**: 662, 1874.

Roentgen Examination of Gas-Filled Abdomen.—The *Nederlandsch Tijdschrift* cites a recent article by O. Goetze lauding the instructive findings when oxygen is allowed to pour into the abdomen preliminary to roentgen examination. This, he says, is entirely harmless, while it shows the viscera, diaphragm, etc., more clearly than ever before seen.

CARDIOVASCULAR EXAMINATIONS OF RECRUITS

AT CAMP LEWIS MUSTERING OFFICE, APRIL 20 TO OCT. 1, 1918

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Cardiovascular examinations of recruits at Camp Lewis from April 20 until July 20, 1918, were made only on men referred either by the tuberculosis examining board for abnormalities noted on routine chest examination or by the mustering office during general examinations. This method of referring cases was very unsatisfactory, as was shown by the large number of cardiovascular patients, found to be unfit for service after mustering in, who had never been referred to the cardiovascular examiners.

The announcement that 12,000 men would enter camp in July, and that each month thereafter a similar number would probably be sent, made it necessary to increase the efficiency of the cardiovascular examining board and especially to find a better method of referring men to the board.

The following plan was adopted: A board was organized which was composed of twelve medical officers and a corps of enlisted personnel. Nine officers were assigned for temporary duty during the incoming draft, and together with the three permanent cardiovascular examiners composed the board, the permanent specialists being used as a nucleus for the organization.

This board of medical officers was divided into two groups, preliminary and refer examiners. The duty of the preliminary examiners was to examine all the recruits before and after exercise and to recognize enlarged thyroids as well as abnormalities in the cardiovascular system. Refer examiners made complete cardiovascular examinations of men in whom abnormalities were noted by the preliminary examiners.

Five of the more experienced medical officers were made preliminary examiners and stationed in the upper story of the barracks used by the special examining boards. Any abnormality is noted on a slip of paper, the men are marked "C. V." with a skin pencil and sent to refer examiners downstairs, where in quiet rooms the routine complete examinations are made, including the hopping test as prescribed.

The work of the preliminary examiners is extremely important and, we think, efficient. Recruits are examined in groups of forty, stripped to the waists, lined on spots on the floor. Each officer examines eight men in each group, first rapidly passing down the line noting the location and character of the apex impulse and auscultating at all four valvular areas. Under the direction of an enlisted drill master the men are then exercised, bending forward and touching the floor rapidly forty times, keeping the knees stiff. (This exercise was used because it was noiseless and vigorous). The examiners again pass down the rows of recruits, this time more carefully, observation, palpation and auscultation being used. The purpose of the first preliminary examination is to cause those with dangerous defects to drop out without being subjected to too vigorous drill.

Recruits in whom cardiovascular defects have been noted are sent to the refer examiners downstairs. Here the history form is filled out, the pulse counted standing and supine, the men are made to hop 100 times on the left foot, and the pulse is counted in the supine position immediately and again after two minutes. This work is all done by enlisted clerks. Pulse records taken by clerks were probably more accurate than would have been if made by officers, as the men were chosen for this work and coached till they were very accurate; also conditions of pulse taking are maintained at a uniform standard. The medical officers now complete the examination. Fluoroscopy is performed in the same building by experts from the camp base hospital and tuberculosis examining board.

TABLE 1.—COMPARISON OF DISPOSITION OF RECRUITS

		Referred		Accepted			Rejected		
System	Draft Total	Total	% of Draft	Total	% of Draft	% of Refer.	Total	% of Draft	% of Refer.
1. Old....	40,851	2,474	6.0	2,063	5.0	83.4	411	1.2	16.5
2. Present	30,697	4,213	13.7	3,340	10.8	79.3	873	2.8	20.7

Goiter examinations were conducted by a specially assigned medical officer with his own group of clerks during the July draft, but the examination of a large number of goitrous men, as reported by Capt. Thomas Addis, M. C., and Capt. W. J. Kerr, M. C.,[1] of this board in a previous paper, showed that in spite of the fact that endemic goiter is very prevalent in recruits reporting to Camp Lewis, toxic symptoms are extremely rare. Therefore in the August draft this special goiter examination was omitted. Those men with moderately or greatly enlarged thyroids were noted and those rejected in whom sufficient tumor was present to prevent use of the regulation military uniform without alteration of the collar, and also those presenting definite pressure symptoms, as well as marked substernal thyroids. The goiter notations were made during the routine cardiovascular examinations.

TABLE 2.—PROBABLE RESULTS UNDER PRESENT SYSTEM AS COMPARED WITH RESULTS UNDER OLD SYSTEM

	Total Recruits	Rejected	
		Per Cent.	Number
1. Results under old system.....	40,851	1.2	411
2. Probable results on same men under present system	40,851	2.8	1,144
Difference.....		1.6	733

The figures obtained by the cardiovascular examiners are given in Table 1, comparing the disposition of cases before the installation of the present system, including an increment of 40,851 men, and under the present system, 30,697 men. Analysis of the table shows an increase of more than 100 per cent. in the number of men referred and a corresponding increase in the number rejected. This means that the physical condition of drafted men being the same in both groups, 505 men were rejected under the present system who would have been missed by the old method, and 733 were accepted while the old system was in vogue who were suffering from disqualifying defects

TABLE 3.—PROBABLE RESULTS UNDER OLD SYSTEM AS COMPARED WITH RESULTS UNDER PRESENT SYSTEM

	Total Recruits	Rejected	
		Per Cent.	Number
1. Probable results under old system...	30,697	1.2	368
2. Results under present system.....	30,697	2.8	873
Difference.....		1.6	505

1. Addis, T., and Kerr, W. J.: The Relative Frequency in Recruits With and Without Thyroid Enlargement of Certain Signs and Symptoms Which Occur in Neuro-Circulatory Asthenia Arch. Int. Med., to be published.

and who would have been detected and rejected by the present board (Tables 2 and 3).

The most obvious thing shown by Table 4, the diagnosis tabulation, is the large relative and absolute increase in the number of certain types of abnormalities noted, especially cardiac murmurs, mitral insufficiency, mitral stenosis and irritable hearts. The increase of apical systolic and decrease in pulmonic systolic functional murmurs resulted from the more strenuous method of exercise used, which we find tends to bring out murmurs at the apex while those at the base tend to disappear.

The detection of a greater number of mitral insufficiency and stenosis cases and those of mitral stenosis

TABLE 4.—DISPOSITION OF CASES BY DIAGNOSIS*

Diagnosis	April 20 to July 20			July 20 to October 1		
	Accepted	Rejected	Total	Accepted	Rejected	Total
1. Normal hearts	900	0	900	937	0	937
2. Apical systolic murmur	309	0	309	680	1	681
3. Pulmonic systolic murmur	173	1	174	100	0	100
4. Cardiac respiratory murmur	34	0	34	33	0	33
5. Murmurs without significance	0	0	0	4	0	4
6. Mitral insufficiency	211	172	383	1,298	418	1,716
7. Mitral stenosis	1	2	3	2	12	14
8. Mitral insufficiency and stenosis	2	92	94	0	272	272
9. Aortic insufficiency	0	32	32	0	32	32
10. Aortic insufficiency and stenosis	0	14	14	0	37	37
11. Mitral insufficiency and stenosis	0	13	13	0	14	14
12. Aortic stenosis	0	1	1	2	0	2
13. Pericarditis	0	0	0	3	0	3
14. Myocarditis	0	0	0	0	5	5
15. Congenital lesions	1	1	2	1	0	1
16. Bradycardia	11	0	11	6	0	6
17. Simple tachycardia	138	5	143	121	11	132
18. Sinus arrythmia	51	0	51	9	0	9
19. Extrasystoles	90	0	90	25	0	25
20. Tachycardiac paroxysms	2	1	3	0	0	0
21. Auricular fibrillation	0	4	4	0	2	2
22. Auricular flutter	0	0	0	1	0	1
23. Pulsus alternans	0	0	0	0	1	1
24. Irritable heart	2	2	4	20	25	45
25. Hypertrophy without hypertension	20	7	27	28	5	33
26. Hypertrophy with hypertension	7	4	11	1	0	1
27. Arterial hypertension	1	1	2	1	2	3
28. Displaced heart	14	3	17	34	0	34
29. Dilatation of aorta	2	0	2	0	0	0
30. Aortic syphilis	0	0	0	0	3	3
31. Aneurysm of aorta	0	1	1	0	1	1
32. Goiter	94	40	134	30	30	60
33. Hyperthyroidism	0	1	1	0	0	0
34. Substernal thyroid	0	0	0	0	2	2
35. Tricuspid lesion	0	1	1	0	0	0
36. Pulmonic lesion	0	1	1	0	0	0
37. Elephantiasis	0	1	1	0	0	0
		400	2,403			
		11†	11†			
Total	2,063	411	2,474	3,338	873	4,209

* Four cases accepted with waiver of disability are not included in the list.

† Eleven cases classified as combined lesions were recorded in whom duplicate records were not kept and the exact diagnosis is not obtainable.

is due also to the improved exercise, as it is well known that presystolic and diastolic murmurs many times are heard only after violent exercise.

Increase in the number of cases of irritable heart (neurocirculatory asthenia) was due to the more careful observation by the preliminary examiners. All cases in which an abnormally high pulse rate was noted after exercise or in whom objective symptoms, such as undue dyspnea or faintness, were observed were sent to the refer examiners. We have been enabled also to detect many cases of acute infectious disease before the onset of subjective symptoms, tachycardia without history of previous trouble putting us on our guard. In these cases, temperature was taken; and if it was above normal, the recruit was isolated and sent to his infirmary. If the man complains of fatigue due to a long, arduous trip to the camp, he is given a rest, a good night's sleep, and his pulse is counted again on the following day.

Attention will probably be brought to the large number of men with mitral insufficiency accepted for full duty. These men show the characteristic murmurs with no cardiac hypertrophy, very slight or no accentuation of the pulmonic second sound, and no history of recurring attacks of acute rheumatic fever, chorea or tonsillitis. The apex beat is well within the nipple line and of normal character; the pulse and reaction to exercise are normal; the systolic murmur at the apex is transmitted well into the axilla; there is a systolic murmur at the mitral area, and the pulmonic second sound is more distinct than the aortic but is not definitely accentuated. These men are not classified as rejects in the recruiting regulations and have been accepted for full military duty. A list has been made of all these men, and I am at work at present preparing a report of their final disposition, especially as to their ability to undergo severe continued physical strain, such as given in the intensive training in camp.

CONCLUSIONS

1. The system of referring recruits for supposed cardiovascular defects by a mustering board or tuberculosis board when abnormalities are detected during the course of other examinations is entirely unsatisfactory. At least 50 per cent. of men coming to camp with disqualifying cardiovascular defects are not detected by this method.

2. A system such as the one in vogue at Camp Lewis, whereby every recruit is given a special cardiovascular examination, is efficient and should be instituted in all camps receiving large draft increments.

EFFECT OF CARDIAC DISTRESS ON THE WORK OF RECRUITS

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Physically, an army, like a chain, is only as strong as its weakest part. Each individual link or element in the make-up of the soldier-to-be is examined by the orthopedic, neuropsychiatric, tuberculosis, cardiovascular, genito-urinary and other examiners. On their arrival at Camp Sherman, the recruits pass before the different examiners, and the manifestly unfit are rejected. The tuberculosis examiners make a cursory examination of the heart. The apparently normal are passed. Those showing any abnormality are referred to the cardiovascular examiners. Here they are examined more carefully, from ten to fifteen minutes, or more when necessary, being devoted to each case. As a rule about 3 per cent. are referred to this board, a varying number of whom are accepted. The organic valvular diseases give little trouble, as the rules governing this type of case are more or less definite. The same group of cases that offers trouble in the examining line causes the greatest difficulty when more time is given for examination. We refer to the individuals complaining of some dyspnea, some cardiac distress or pain, and showing a rapid pulse, a poor response to exercise, often blue, cyanotic hands and feet, profuse sweating, especially in the axillae, a coarse, irregular

tremor, and apparently little change in the heart. What becomes of the milder cases when accepted?

Three hundred men returned to the development battalion from the various line organizations because of complaints of "heart trouble" throw some light on this problem. The men, passed as apparently normal, were placed in organizations, found unable to drill, rejected as unfit for full military service, and referred to the development battalion.

OCCUPATION

As shown in Chart 1, the largest number of cases occurred among farmers, with laborers next, the two classes forming 168 cases, or 56 per cent. of the total. The clerical positions came next, with 17 per cent. The remainder were fairly evenly scattered. Sedentary occupations seemed to have little to do with the cases referred to the development battalion.

HISTORY OF PAST ILLNESSES

Chart 2 shows the relative frequency of the past illnesses. In every case the disease was named, the man answering "yes" or "no" to the inquiry. Whether measles and whooping cough are so common, or the familiarity with the names caused the men to believe that they had had the diseases in the past, is an open question, although all answers seemed to have been given in good faith. Excluding measles and whooping cough, acute rheumatic fever was the most common illness, 33 per cent. of the men giving a definite history of swollen, tender joints, with the acute process going from one joint to another. Occasionally, there were men who dated their trouble back to an acute infection. The acute infections of scarlet fever, typhoid fever, pneumonia and tonsillitis have about the same frequency, while the considerable number of men from the South raises the malaria incidence.

It is interesting to note that 154 have had symptoms for five years or more, some insisting that they

Chart 1.—Relative occupations.

have always had distress. Among those who have had trouble for six months or less, only twenty-three in all, most attribute their difficulty to an acute infection.

As would be expected in youths of this age, the use of tobacco is almost universal, 253 out of 300 using it in some form or another. Alcohol also has its share of followers, two thirds using it as a beverage, some to excess. Whether these proportions are high for males of this age it is impossible to state.

PRESENTING SYMPTOMS

Giddiness, present in 242 cases, was the most common symptom. It was especially noted on sudden stooping or change of position, when drilling in the hot sun or when standing at attention, and was a frequent cause of dropping out of line at drill or when on a hike. As a rule it was momentary and was relieved by a short period of rest.

On prolonged effort or on sudden severe effort, dyspnea occurred in 239 instances. A hike or double quick time sent these men out of formation in short order. On hopping 100 times, a few showed marked dyspnea; but as a rule it was slight or of moderate severity. However, it seemed to be very troublesome, and "shortness of breath" was the complaint that sent many to the surgeon.

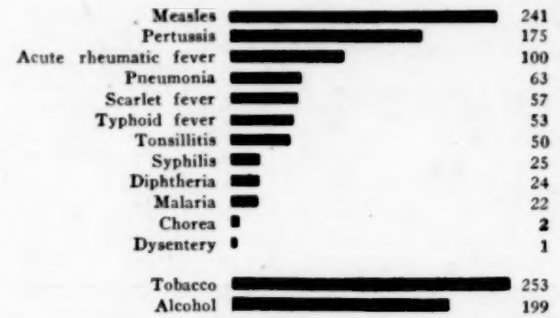

Chart 2.—Relative frequency of illnesses in the past.

Palpitation occurred in 218 out of the 300 cases.

Forty-seven gave a history of fainting. This does not include those with a single syncopal attack, but only those in which there was a history of repeated attacks.

In 154 there was a cough, which seems to be a common complaint among the recruits.

Varied complaints were received, but the foregoing seemed to be a group that persistently ran through the 300 cases.

PHYSICAL FINDINGS

The physical findings were interesting. Among the 300 men returned to the development battalion, 19 had hypertension with hypertrophy; 12, myocarditis; 9, mitral insufficiency; 8, hyperthyroidism; 5, aortic insufficiency; 4, hypertrophy of uncertain etiology; 3, mitral stenosis, and 1, tuberculosis.

This leaves 239 of the original 300 who belong to the large group of the so-called persistent tachycardias, certainly an important group. Two hundred and forty-eight were white, and fifty-two were colored. The average weight was between 120 and 150 pounds, with 190 between these limits. The extreme varied from 100 to 205 pounds. Cyanosis of the hands and feet occurred in 142, and a coarse, irregular tremor of the hands was present in 175 instances. The heart showed enlargement only when definite organic disease could be demonstrated. The apex beat was diffuse in 108 cases. A presystolic thrill was present in three cases of mitral stenosis, but was not demonstrated in any of the "persistent tachycardias." A definite systolic thrill occurred in six cases, although an indefinite suggestion of one was present in some of the rapid overacting hearts. The heart tones were distant in twenty-two instances, and in fifty-nine the first tone at the apex had lost its muscular element and was approaching the second tone in quality. The first tone at the apex was reduplicated in eight cases, and the second tone at the base twice. A systolic murmur was heard at the apex in 118 individuals, and at the pulmonic area in forty-one.

The three mitral stenosis lesions revealed presystolic murmurs over the apex, while over the third left interspace the diastolic blow of aortic insufficiency was found five times. A cardiorespiratory murmur was discerned nine times. A definite respiratory sinus arrhythmia was present in twenty-one cases, and premature systoles occurred in nineteen of the 300 cases. The systolic pressure fluctuated between 110 and 280, while the diastolic was more constant, varying between 80 and 100 mm. of mercury. With the exception of the broader top of the systolic curve, the two curves resemble one another quite closely (Chart 3).

An extremely interesting finding was the high percentage of the men who were returned with an enlargement of the thyroid gland. Many men coming to this camp were recruited from Ohio, Indiana and Illinois, or the so-called goiter belt about the Great Lakes. Many of these cases were passed as simple goiter and sent to the line organizations. Out of the 300 men that were returned to the development battalions because of cardiac distress, eighty-six, or 28.6 per cent., showed a definite enlargement of the thyroid gland. Eight were classed as instances of hyperthyroidism, as they presented an enlarged gland, a fine tremor, tachycardia, exophthalmos, sweating, flushing, a high pulse pressure, and other symptoms accepted as an expression of a toxemia due to an excessive, or a deranged, secretion of the thyroid gland. In seventy-eight, the thyroid was enlarged without question, the heart was rapid, a coarse, irregular tremor was evident in the hands, which were often cyanotic, and sweating in the axillae was profuse; but no exophthalmos, no fine tremor and no history of alimentary disturbances could be obtained, so that these cases were not the typical accepted textbook thyroid intoxications, but, certainly, the large number returning suggested that

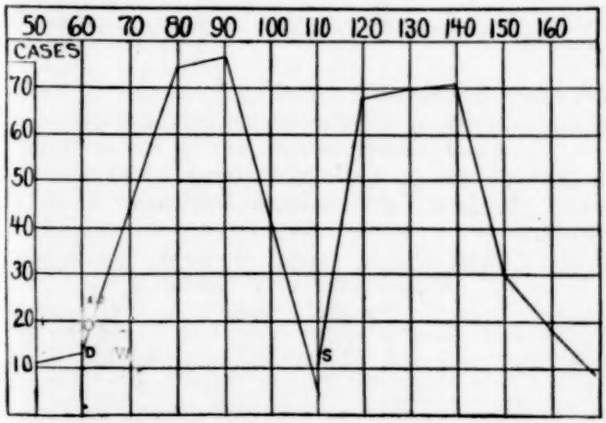

Chart 3.—Height of blood pressure in millimeters of mercury: *D*, diastolic; *S*, systolic.

the so-called simple goiters may be potentially or actively toxic, or at least that the men who have the so-called simple goiters do not stand intensive training well.

A definite thyroid enlargement can easily be seen on the first examination, and if not classified, at least a notation should be made so that the individual may be kept under observation by the battalion or regimental surgeon.

The nervous element sometimes predominates in the individuals with a persistent tachycardia. Out of 100 cases classified by the heart examiners, twenty were also under observation by the neuropsychiatrists, who were doing their work independently in another part of the building. The accompanying table shows how the various diagnoses run in a series of such cases.

Probably some of the tachycardias will be eliminated through examination by other examiners, who may find the basis for the rapidity of the heart, which must be considered a symptom and not an entity. It is probable that neurologic conditions as well as some of the thyroid cases or endocrinopathies are classed among the so-called neurocirculatory asthenia cases. Many of the patients with persistent tachycardia complain of identical symptoms and present the same clinical picture. The diagnosis of neurocirculatory asthenia could be used to cover a large number of cases in which the eitology is uncertain, and, indeed, may be a group of conditions instead of a well defined clinical entity. Mackenzie says:

CARDIOVASCULAR AND NEUROPSYCHIATRIC DIAGNOSES IN PATIENTS WITH PERSISTENT TACHYCARDIA

Initial of Patient	Cardiovascular Diagnosis	Neuropsychiatric Diagnosis
J. N.	Simple tachycardia	Traumatic neurosis
F. H.	Nervous tachycardia	Psychoneurosis, neurasthenia
T. C.	Nervous tachycardia	Neurasthenia
E. W. F.	Nervous tachycardia	Epilepsy
A. S. W.	Hyperthyroidism	Hyperthyroidism
W. C.	Tachycardia	Epilepsy
J. A. C.	Tachycardia	Inebriety
J. Z.	Goiter, heart negative	Hyperthyroidism
D. C. L.	Persistent tachycardia	Neurasthenia
F. B.	Goiter, hyperthyroidism (?)	Hyperthyroidism
H. E. S.	Persistent tachycardia	Family tremor
W. W.	Goiter, tachycardia	Hyperthyroidism
S. W. R.	Persistent tachycardia	Imbecile
J. W. P.	Persistent tachycardia	Moron
J. J.	Tachycardia, hypertension	Psychoneurosis
J. J. G.	Nervous tachycardia	Intention tremor

> It has already been pointed out that when the heart is forced to do work beyond its normal capacity, or, in other words, after the reserve force has been exhausted, sensations of distress arise. The sensations may vary, at first, a slight breathlessness, a sensation of suffocation referred to the throat, or a tightness across the upper part of the chest. These are the signs usually experienced by healthy people whose hearts have for the time being been subjected to a severe strain. In addition to these sensations, pain may be induced, and be followed by other sensory disturbances, as hyperalgesia of the skin and subcutaneous tissues of the left chest wall.

In the group of men referred to the development battalion, the 239 cases showing a tachycardia showed a systolic-diastolic rate or energy index, as described by Barach, consistently over 20,000. Add to this the work put on a heart by the intensive training of the military routine, and one can readily see why a certain number complain of "heart trouble."

SUMMARY

1. Few organic valvular heart lesions escape during the routine examination of recruits.

2. Men with persistent tachycardia due to various causes form the largest group slipping by the examiners, later to return unable to perform full military duty.

3. The number of alcohol and tobacco users among those complaining of cardiac distress seems high. Sedentary occupation seemed to have little to do with the cases examined here.

4. A large number of men with enlarged thyroid glands develop cardiac symptoms when put under severe physical strain. Soldiers with enlarged thyroid glands should be kept under observation.

5. A certain percentage of the persistent tachycardias are fundamentally nervous conditions and can be eliminated by the neuropsychiatrists.

6. The persistent tachycardias are a group of conditions, the etiology of which must be determined before a rational plan of treatment can be prescribed.

RELATION OF METEOROLOGICAL CONDITIONS TO THE PREVALENCE OF PNEUMONIA

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While there seems little doubt that meteorological conditions have a distinct influence on the occurrence of pneumonia, and although a good deal of investigation has been carried on in the endeavor to throw light on this relationship, yet there is still a considerable lack of unanimity of opinion in our present views regarding this connection.

Concerning the relation of season to pneumonia, it is apparent that the greatest incidence from this disease occurs during the cold months. Seitz[1] showed that for a period of twenty years in Munich, 37 per cent. of the cases occurred in the spring, 32 per cent. in winter, 16 per cent. in autumn and 15 per cent. in summer. Anders[2] found the incidence in Philadelphia for a period of ten years to be: first quarter, 43.2 per cent.; second quarter, 24.5 per cent.; third quarter, 9.6 per cent., and fourth quarter, 22.8 per cent. Analyses that I have made of the deaths from lobar pneumonia in New York City for the years 1901 to 1915 show, for the first quarter, 38.1 per cent.; second quarter, 25.8 per cent.; third quarter, 10.9 per cent., and fourth quarter, 25.3 per cent. The monthly incidence is shown in Table 1, from which it will be seen that the maximal number of deaths occurs in March and the minimal number in August.

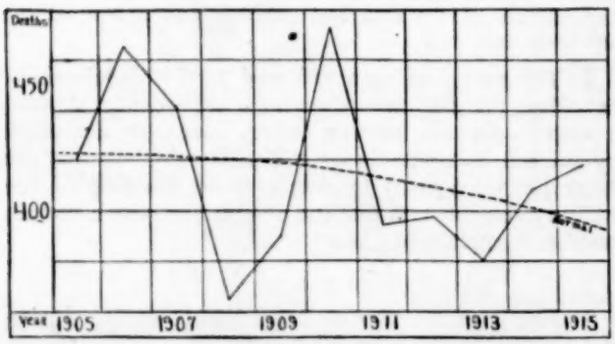

Chart 1.—Annual number of deaths and normal number of deaths from pneumonia, Providence, R. I., 1905-1915.

It was long recognized that temperature alone altogether fails to explain increases and decreases in the pneumonia death rate, and the answer was sought for in other meteorological conditions. As to the relation of temperature changes or variability, Aufrecht[3] found the incidence of pneumonia to be directly dependent on the prevalence of unequal and changeable meteorological conditions, especially on the occurrence of abrupt and marked changes of temperature at a time when the mean temperature was very low. Anders contends that abrupt oscillations of temperature per se have a restricted influence, if any, as a favoring factor. On the other hand,

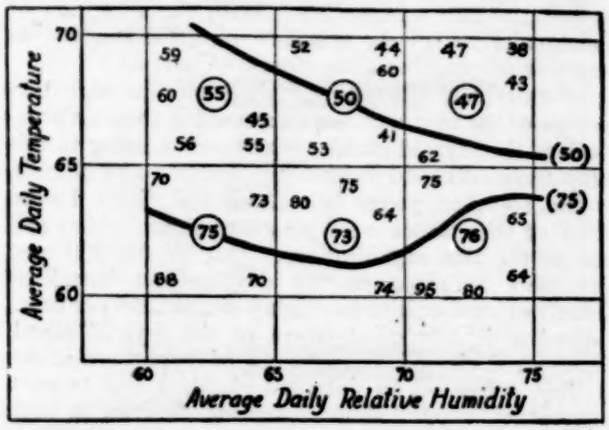

Chart 2.—Method of constructing the climograph: A sheet of ruled paper is divided into squares, each square corresponding to a certain combination of temperature and humidity, one square, for example, for a combination of temperatures between 60 and 65 F. and humidities between 60 and 65 per cent. The percentage mortality for each month is then recorded in the proper square determined by the combination of temperature and humidity prevalent for that month. The values recorded within each square are then averaged, and the resulting value is indicated within the small circle. Thus, 75 is the average percentage of mortality for months having a temperature between 60 and 65 degrees and a humidity between 60 and 65 per cent. Points of equal value from the standpoint of percentage of mortality are then joined by lines. Thus, the upper sloping line on the diagram is intended to pass through all points having a value of 50 per cent. In the middle square, the line passes through the point 50; but in the square to the left, having a greater value than 50, the line passes above this point, while in the square to the right, it necessarily must pass below the value of 47. The lower line, which is supposed to pass through all points having a value of 75 per cent., will be noted to pass below the value 73 (central square) and above the value of 76 (square on the right).

Fraenkel[4] has pointed out that, in certain localities (London, Dublin, Wurzburg and Tübingen) most of the pneumonia cases occur during those winter months in which, while the actual temperature is lower, yet the daily variation is less than during the spring.

TABLE 1.—DEATHS FROM LOBAR PNEUMONIA, BY MONTHS, IN NEW YORK CITY (1901-1915)

Month	Deaths	Month	Deaths
January	11,331	July	3,258
February	10,555	August	3,024
March	11,943	September	3,388
April	10,193	October	4,882
May	7,974	November	7,104
June	4,704	December	10,448

Concerning the influence of relative humidity Riebe[5] believes that a contributing cause of pneumonia (in Posen) is found in excessive humidity. Baker[6] noted a slight correlation between a low absolute humidity and a low pneumonia incidence. Anders, who studied this matter in detail, does not come to any definite conclusion on this point.

In regard to the effect of barometric pressure, Jurgensen[7] maintains that a high barometer is coincident

1. Seitz: Beircher Intellingsblatt, 1874.
2. Anders, J. M.: Meteorological Conditions in the Causation of Lobar Pneumonia, Am Med. **8**: 407, 1904; Social Conditions in America in Their Relation to Medical Progress and Disease, J. A. M. A. **40**: 1284 (Moy 9) 1903.
3. Aufrecht, in Nothnagel: Practice, Diseases of the Bronchi, Lungs and Pleura, p. 419.
4. Fraenkel, quoted by Osler and McCrae: Modern Medicine, 1907.
5. Riebe: Vrtljschr. f. gerichtl. Med. w. f. **40-41**: 128.
6. Baker, H. B.: Relation of Certain Meteorological Conditions to Diseases of the Lungs and Air Passages as Shown by Statistical and Other Evidence, Tr. IX Internat. M. Cong. **5**: 52, 1887.
7. Jurgensen: Traité de médecine **7**: 471.

with a diminished prevalence of the disease. Anders found that those months in which the highest death rate occurred showed maximal monthly barometric range; and vice versa, those months showing minimal barometric range gave the lowest death rate.

The influence of winds on pneumonia incidence has not been definitely established. Anders maintains that the direction of the wind (northwest) bears a close relation to the period of maximal mortality from pneumonia.

From this brief summary it is to be seen that the evidence presented by investigators is conflicting.

While engaged in an investigation of death rates from pneumonia in cities in New England and the North Atlantic states, I noted that these were markedly higher than those for cities in the interior or on the Pacific Coast. Having in mind the prevailing opinion that pneumonia is favored by a moist condition (dampness and cold), I desired to see whether the high rates in the cities along the Atlantic seaboard could be explained on this basis.

After an extended analysis of the more important meteorological conditions (relative humidity, temperature, wind, rainfall and barometric pressure) of the group of seaboard cities, and comparison with a group of inland lake cities (with low pneumonia death rates), no striking or significant points of difference between these two groups could be detected as far as their climatic factors are concerned.

It is to be remembered that in dealing with so complex a problem as pneumonia, one city cannot strictly be compared with another, because of the many contributing factors. Such elements as social and housing conditions, and the race and age distribution of the population, are important controlling forces in determining a death rate. It was decided, therefore, to study the climatic factors separately in each city and then to compare these city by city. This plan was undertaken, and the methods used in the past by investigators in this field were followed; but after extended studies, again no significant results were obtained. At this time I was fortunate in hearing of a new method of plotting such records, devised by Prof. Ellsworth Huntington, research associate in geography at Yale University; and adopting this procedure, I began the investigation anew.

It should be stated at the outset that with the exception of one city (Providence, R. I.), the deaths studied are those for lobar pneumonia only (exclusive of bronchopneumonia). The reason for excluding the latter condition is that so many cases of the acute communicable diseases (diphtheria, measles, scarlet fever and whooping cough) terminate in bronchopneumonia that in order to get a true picture of the incidence of lobar pneumonia one should avoid complication by this group of diseases.

METHOD OF MAKING CLIMOGRAPH

Professor Huntington's method for the statistical study of the climatic effects depends on the use of a graph which he calls the climograph—a diagram representing the effect of climate on man. A brief discussion of the construction of the climograph is here given, and those desiring more details must be referred to his original article.[8]

The deaths are first recorded by months of occurrence. Allowances must be made for the varying number of days in different months, and hence a correction must be made. Thus, for February the correction is $^{31}/_{28}$, and for months of thirty days it is $^{31}/_{30}$. The yearly totals are then plotted, and a smooth curve is drawn through these points (Chart 1). From this it will be seen that a normal curve for the period is obtained, representing the conditions that would result if the fluctuations from year to year did not occur.

We are now interested in observing how one year differs from the other as regards mortality, and in order to obtain this difference we note to what extent any particular year is above or below the normal. Obviously, the difference between the recorded number and the normal number of deaths is ascertained by measuring the distance between the two curves. After the normal annual mortality has been determined from the curve, the division of this figure by 12 will give the normal monthly mortality (Table 2). The normal monthly values are then compared with the monthly values as actually obtained from the death returns, which are expressed as a percentage of the normal. These percentages are then plotted against temperature and relative humidity for the corresponding months.

After the percentages are recorded they are grouped in 5-degree intervals of temperature and humidity, and the average mortality of all months having a certain combination of temperature and humidity is determined. For instance, in Chart 2 in the interval corresponding to a temperature from 60 to 65 degrees and relative humidity from 60 to 65 per cent., the percentages when grouped and averaged give a value of 75. A line is then drawn through points of approximately equal value as to average mortality. This procedure corresponds to the drawing of isothermic lines, and the line in this instance might be called an isolethal line. Chart 2 shows in detail the method of construction of the climograph.

TABLE 2.—WORKING SHEET FOR THE CONSTRUCTION OF CLIMOGRAPH FOR PROVIDENCE, R. I.

Year	Annual Mortality Recorded	Annual Normal Mortality	Monthly Normal Mortality	Actual Monthly Mortality in Percentage of Monthly Normal Mortality											
				January	February	March	April	May	June	July	August	September	October	November	December
1905	420	422	35	188	197	215	109	109	74	26	3	40	49	80	111
1906	466	422	35	137	157	217	223	128	54	54	26	31	80	74	149
1907	440	421	35	203	231	168	100	71	68	63	20	57	60	97	123
1908	363	420	35	217	194	168	117	68	34	17	23	20	49	63	66
1909	389	418	35	128	194	157	103	68	46	60	43	34	54	106	117
1910	473	416	35	200	174	220	191	114	74	40	28	14	55	100	128
1911	395	412	34	132	162	182	170	85	59	44	29	41	76	85	94
1912	398	409	34	150	180	180	117	82	65	53	29	50	65	79	121
1913	379	405	34	150	165	147	100	71	53	50	41	50	65	88	135
1914	408	401	33	215	194	167	200	64	48	36	33	42	76	73	88
1915	417	398	33	137	127	252	267	76	64	39	15	33	39	82	134

8. Huntington, E.: World Power and Evolution, New Haven, Yale University Press, 1918.

RELATION OF PNEUMONIA TO RELATIVE HUMIDITY

Chart 3 shows the relation of pneumonia to relative humidity for New York City plotted as indicated

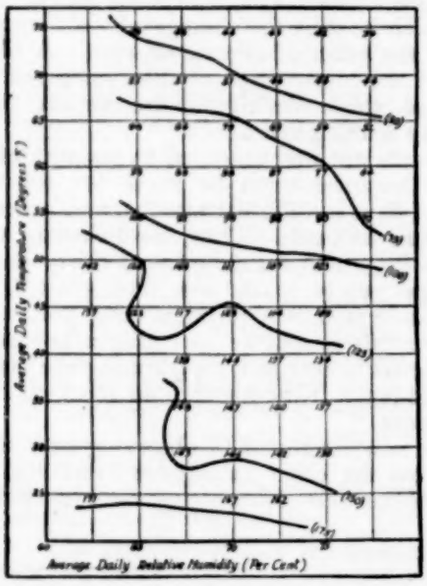

Chart 3.—Relation of daily temperature and relative humidity to the prevalence of pneumonia in New York City, 1901-1915. The figures on this graph indicate the incidence of pneumonia that obtains at each specified combination of temperature and relative humidity expressed as a percentage of the annual average.

above. The sloping lines have been drawn in this case as in the other diagrams, through points having a value of 50, 75, 100, 125, 150 and 175. Thus, the 50 line means that it passes through all points that show a death rate of 50 per cent. below normal (the normal being 100). Similarly, the 125 line passes through all points that show a death rate of 25 per cent. above the normal

Again, the area between the 75 per cent. line and the 100 line means that on an average the deaths in months

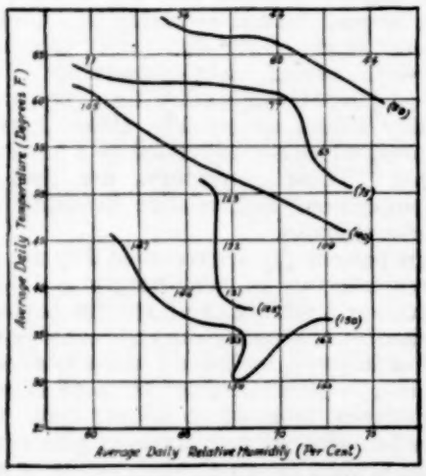

Chart 4.—Relation of daily temperature and relative humidity to the prevalence of pneumonia at Newark, N. J., 1906-1915. The figures on this graph indicate the incidence of pneumonia that obtains at each specified combination of temperature and relative humidity expressed as a percentage of the annual average.

having any of the combinations of temperature and humidity falling between these lines range from normal to 25 per cent. *less* than normal. The area between the 100 line and the 125 line means that the deaths falling between these lines range from normal to 25 per cent. *more* than normal.

It is to be noted that all of these lines are nearly parallel. The bend in the 125 line is accounted for by the fact that two exceptionally high figures occurred at that point, which had a tendency to increase the value. It is further to be noted that the direction of these lines is downward, and it is this fact which is most significant. This is interpreted to mean that at a high relative humidity more favorable conditions obtain. For instance, it will be seen that the 125 line extends from 53 F. and 63 per cent. relative humidity to 40 F. and 77 per cent. relative humidity. In other words, the same death rate obtains at a colder and more moist condition than at a warmer and drier condition, in spite of the fact that, as is well known, the largest number of deaths occur during colder periods. This relationship, it will be seen, occurs for every line. The bottom line is somewhat flatter, but this is due to the relatively fewer observations for that area. The

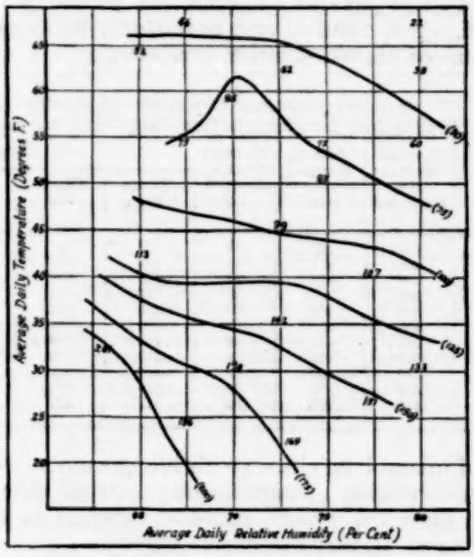

Chart 5.—Relation of daily temperature and relative humidity to the prevalence of pneumonia at Providence, R. I., 1905-1915. The figures on this graph indicate the incidence of pneumonia that obtains at each specified combination of temperature and relative humidity expressed as a percentage of the annual average.

same thing can be seen by reading the values horizontally from left to right. Here again, with very few exceptions the values (percentage mortality) decrease as the humidity increases. For instance, it will be noted that with a temperature of 50 F. and with 62 per cent. relative humidity, the percentage mortality is 142, that is, 42 per cent. greater than normal. As we pass to the right (that is, as the relative humidity increases), the percentage mortality decreases. Thus, with 70 per cent. humidity (and a temperature of 50 F.), the percentage mortality is 111; and with 78 per cent. it is 100.

The conclusion which may be drawn from this chart is that for New York City at any given temperature fewer pneumonia deaths will occur under conditions of high relative humidity than at the same temperature with a low relative humidity.

Charts 4 and 5 show the results obtained for Newark, N. J., and Providence, R. I. It will be noted that here again the relations of pneumonia to relative humidity are similar to those observed for New York

City. Since these curves show such a close similarity, it is fair to combine them; and for this purpose the average values for each city have been properly weighted. The net result (that is, a composite picture weighted and smoothed) is shown in Chart 6. The same type of curve is of course obtained, namely, an oblique line. The irregularity in the 150 line is due to two exceptionally high values observed for New York City. Here, too, it will be seen that the values decrease from left to right, indicating that in cool weather, for instance, moist conditions are better than dry. In this respect the graph is surprising, for it is usually supposed that dry weather is best.

From a statistical standpoint it is to be noted that this curve represents a total of 516 observations of relative humidity and a total of 108,122 deaths, a large enough unit on which to base a deduction. It is safe, therefore, to conclude that for the cities under observation, a high relative humidity is a more favorable condition for a low pneumonia death rate than is a low relative humidity.

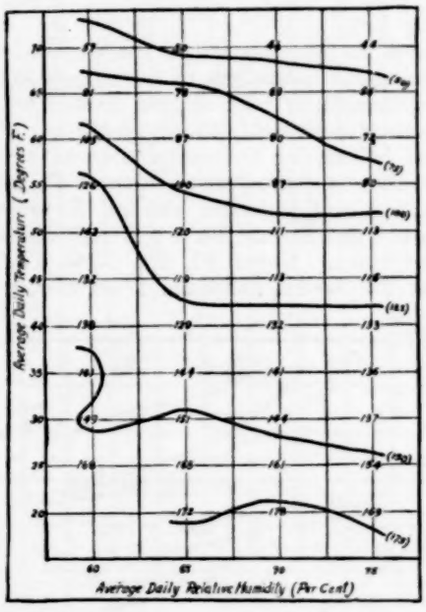

Chart 6.—Relation of daily temperature and relative humidity to the prevalence of pneumonia: Composite of New York City, Newark, Boston and Providence. The figures on this graph indicate the incidence of pneumonia that obtains at each specified combination of temperature and relative humidity expressed as a percentage of the annual average.

RELATION OF PNEUMONIA TO TEMPERATURE VARIABILITY

It will be recalled that there has been a great diversity of opinion in regard to the part that temperature changes play as a factor influencing the prevalence of pneumonia. Anders maintains that abrupt oscillations of temperature have a restricted influence, and it should be pointed out that the negative result obtained by him is most likely due to a faulty measure of variability which he adopted. For his measure of temperature fluctuation he took the difference between the monthly mean maximal and monthly mean minimal temperature. Obviously, this monthly average figure does not reveal the true temperature changes from day to day. A more exact measure of temperature variability which shows the variation from day to day is the fluctuation of the mean *daily* temperature; and though its study is a very laborious procedure, this measure was adopted in obtaining the results to be described below.

Since temperature per se is the most important variable influencing the occurrence of pneumonia, it

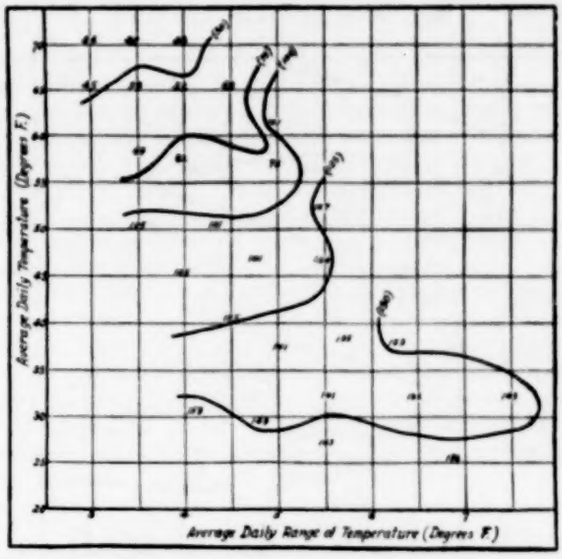

Chart 7.—Relation of daily temperature and daily range of temperature to the prevalence of pneumonia in New York City, 1901-1915. The figures on this graph indicate the incidence of pneumonia that obtains at each specified combination of temperature and daily range of temperature expressed as a percentage of the annual average.

was decided to study the incidence of the disease in relation to both temperature and temperature variability. Charts 7 and 8 show the results charted on this basis for New York City and Newark, N. J. It will be noted that here the lines are oblique and in the direction from left to right, indicating an increase in the death rate corresponding with increasing temperature

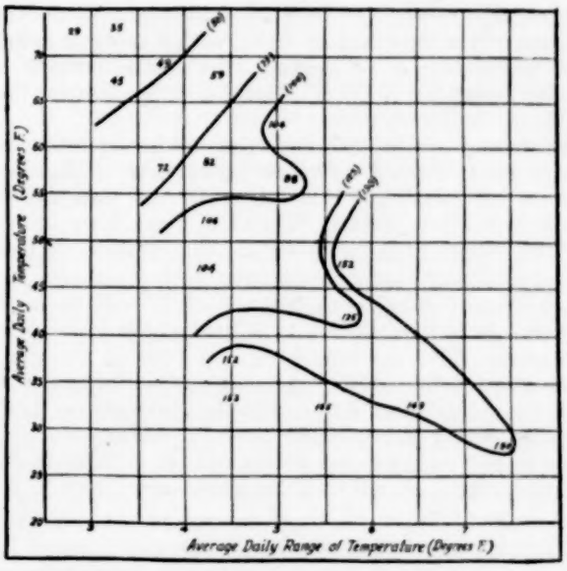

Chart 8.—Relation of daily temperature and daily range of temperature to the prevalence of pneumonia at Newark, N. J., 1906-1915. The figures on this graph indicate the incidence of pneumonia that obtains at each specified combination of temperature and daily range of temperature expressed as a percentage of the annual average.

changes. Thus, the 125 line indicates that on days with a temperature of 55 F. and with a variation of 5.5 degrees, the mortality is as great as on colder days

(38 F.) with a variation of 3.9 degrees. This relationship is more clearly shown in the composite of these four curves, shown in Chart 9. Here it will be observed that with the exception of the bottom curve, a straight line sloping upward from left to right is obtained. This means that (with a certain temperature) less favorable conditions are obtained when the temperature variability is great than when it is small. This relationship is also shown by reading the values at the same temperature from left to right (horizontally), and it will be noted that (with the exception of the region from 30 to 35 degrees) the values (percentage mortality) increase. In other words, this relationship means that at 48 F., with a daily temperature variability of 4 degrees, the same number of deaths occur as at 58 F., with a daily temperature variation of 6.5 degrees.

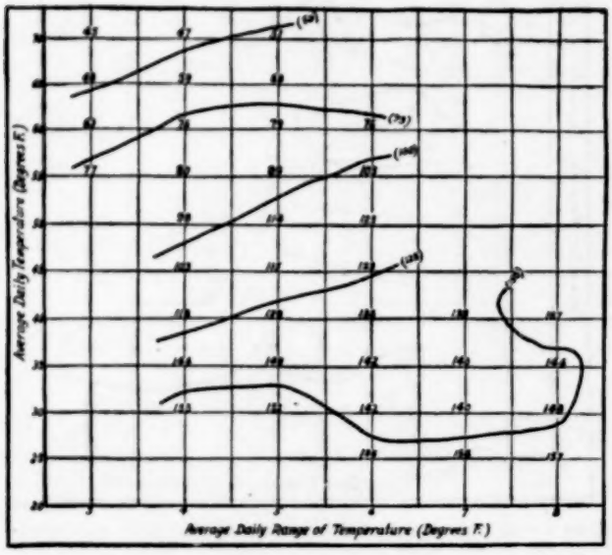

Chart 9.—Relation of daily temperature and daily range of temperature to the prevalence of pneumonia: Composite of New York City, Newark, Boston and Providence. The figures on this graph indicate the incidence of pneumonia that obtains at each specified combination of temperature and daily range of temperature expressed as a percentage of the annual average.

Returning to Charts 7 and 8, it will be seen that the curves are U-shaped. This may mean that a moderate amount of variability is good, while too little or too much variability is bad. This has been found to be true by Huntington, who studied the relation of temperature change to the death rate from all causes. In the case of Newark and New York it will be noted that the curve is distinctly U-shaped at the lower temperatures. That is to say, at this time of the year, when greater fluctuations of temperature occur, wide variations are better borne, possibly because the body becomes better accustomed to cold. However, this point is not conclusively demonstrated by this study, although the curves for New York and Newark are very suggestive.

RELATION TO WIND

I am inclined to believe that Anders overestimated the relationship of wind to the incidence of pneumonia. Table 3, constructed from his data, does not seem to show any such correlation.

That is, February, the month of maximal wind velocity (12 miles an hour), does not show the corresponding largest number of deaths, whereas January, which is the month of maximal deaths, shows a lower wind velocity than February, March or April. In regard to wind direction, Anders believes the assumption to be warrantable that as a rule the direction of the wind (northwest) bears a close relation to the period of maximal mortality from pneumonia. The effect of the northwest wind, according to climatologists, merely lowers the temperature, so that the relation as found by him really corresponds to one of temperature and not to wind direction.

This factor was also studied by me. Beginning with New York City for the years 1901-1915, no definite or distinct curves could be obtained, and it was not deemed advisable to continue the study for the other cities, since New York furnished the largest group of available data.

TABLE 3.—RELATIONSHIP OF WIND TO INCIDENCE OF PNEUMONIA

Month	Wind Velocity per Hr.	Deaths	Month	Wind Velocity per Hr.	Deaths
January	10.8	421	July	9.2	91
February	12.0	372	August	8.1	80
March	11.8	350	September	9.0	83
April	11.6	304	October	10.2	127
May	10.2	224	November	8.3	194
June	9.3	117	December	10.7	286

As a check on this method of studying the relation of meteorological conditions to pneumonia by means of the climograph, it was desired to see whether a disease that is prevalent under conditions different from those influencing the occurrence of pneumonia would also show a characteristic curve. For that purpose diarrhea and enteritis (under 5 years) was selected, since this disease occurs under conditions of high temperature. Chart 10, for New York City, shows that the lowest incidence from this group of diseases occurs when low temperatures prevail; and conversely, the greatest incidence is to be found under conditions of high temperature and humidity—a result that is in conformity with our present views regarding

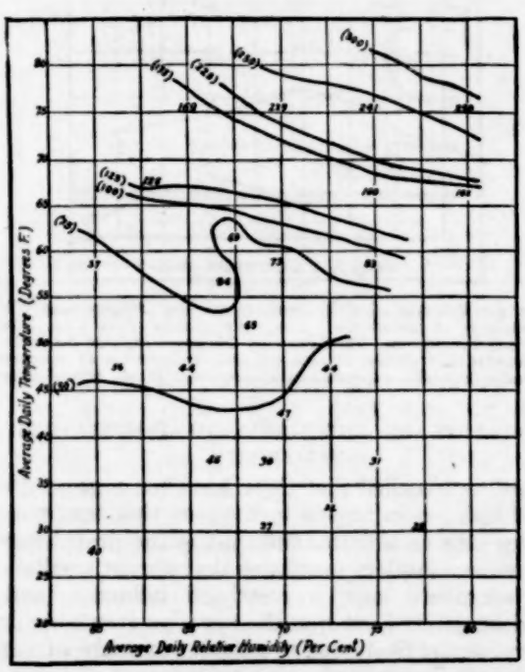

Chart 10.—Relation of daily temperature and relative humidity to the prevalence of diarrhea and enteritis (under 5 years) in New York City, 1905-1916. The figures on this graph indicate the incidence of diarrhea and enteritis that obtains at each specified combination of temperature and relative humidity expressed as a percentage of the annual average.

the causation of these diseases. It will be noted from this chart that from 65 F. and upward the death rate rises as the relative humidity increases (the percentages being read from left to right).

As a further check on this method I took cancer as a disease that should show no seasonal prevalence, and plotted the deaths in the manner above described, and the result is shown in Chart 11.[9] It will be seen that in this case, as would be expected, the incidence is practically equal under all conditions of temperature and humidity and hence no regular curve can be drawn through these points.[10]

SUMMARY

In studying the death rate of lobar pneumonia in its relation to meteorological conditions, it has been found that:

1. Temperature per se is the most important controlling factor.

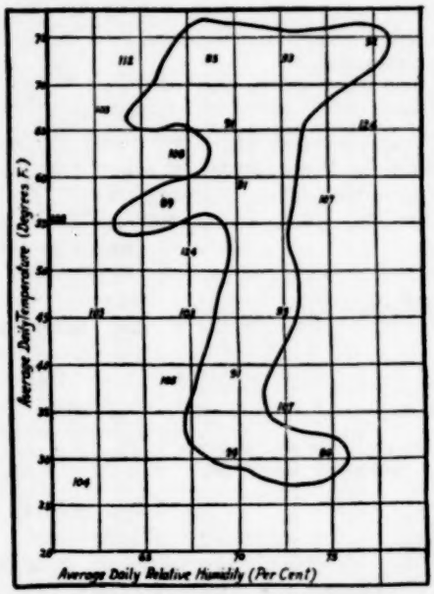

Chart 11.—Relation of daily temperature and relative humidity to the prevalence of cancer at Newark, N. J., 1906-1915. The figures on this graph indicate the incidence of cancer that obtains at each specified combination of temperature and relative humidity expressed as a percentage of the annual average.

2. A low relative humidity is conducive to a high death rate, and a high relative humidity to a low death rate.

3. Increases in the death rate correspond to increasing temperature variations.

9. The curve passes through all points having percentage mortality of 100.

10. In addition to the references already given, the following will be found of interest:

Blake, J.: On the Climate and Diseases of California, Am. J. Med. Sc. **24**: 53, 1852.

Brown, H. A.: The Monthly Incidence of Certain Diseases, New York Med. J. **96**: 127, 1912.

Buchan, A.: Meteorology in Relation to Hygiene, Tr. VII Internat. Cong. Hyg. and Demog. **5**: 98, 1891.

Edson, C. E.: A Meteorological Study of the Winter of 1903-1904, Boston M. & S. J. **151**: 92, 1904.

Gohlisch, J.: Die Witterungsverhältnisse und die Erkältungskrankheiten in Breslau im Jahre 1890-1891, Inaug. Diss. M. Fac. d K. Univ. Breslau, 1897.

Grimshaw, T. W., and Moore, J. W.: Pythogenic Pneumonia, Dublin J. M. Sc. **41**: 399, 1875.

Jessen, F.: Witterung und Krankheit, Ztschr. f. Hyg. u. Infectionskr. **21**: 287, 1896.

Richter, C. M..: The Relation of Anticyclonic Weather to the Prevalence of La Grippe and Pneumonia on the Northern Hemisphere, J. A. M. A. **51**: 660 (Aug. 22) 1908; The Simultaneous and Cyclic Appearance of Epidemics of Pneumonia, Grip and Enteritis on the Northern Hemisphere, ibid. **57**: 1964 (Dec. 16) 1911.

Ruhemann, J.: Beziehungen des Sonnenscheins zu der Saison-Epidemie des Winters 1904-1905, Berl. klin. Wchnschr. **42**: 299, 1905.

Von Schuckmann: Der Einfluss des Windeschwindigkeit auf die Wärmeabgabe, Ztschr. f. Hyg. **46**: 183, 1904.

REACTION OF LEUKOCYTES AFTER VACCINATION WITH ARMY TRIPLE TYPHOID LIPOVACCINE *

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Courmont and Devic[1] found that injection of typhoid and paratyphoid saline vaccines quickly cause a leukocytosis marked by polynucleosis with neutrophilic myelocytosis. In several cases after the use of an ether-killed vaccine, a mild mononucleosis followed the phase of polynucleosis. After the use of a heat-killed vaccine, mononucleosis following polynucleosis was a rarity. Hallion and Mery,[2] in their study of the modifications of postvaccinal leukocytosis after successive doses of heat-killed T. A. B. vaccine, found that their results agreed with those of Courmont and Devic to the extent that a polynuclear leukocytosis followed the injection of the vaccine which later gave place to mononucleosis. They found, also, that the leukocytic reactions after successive doses became progressively less intense. Mery and Girard[3] found that the polynucleosis following the injection of the heat-killed T. A. B. vaccine is independent of the method of injecting the vaccine. They found that after injection there is a polynuclear increase and then a tendency to mononuclear increase with a leukopenia. Mery and Girard[4] a little later presented the results of their study of the modifications of the leukocytes in the blood of man following vaccination with large doses of a heat-killed T. A. B. vaccine. They observed the same leukocyte changes as after smaller doses, but they were more marked. To sum up the experiences of the French investigators: Vaccination with the various vaccines T. A. B., whether given subcutaneously or intravenously, and whether ether-killed or heat-killed, is followed by a very rapidly appearing polynuclear leukocytosis which reaches its maximum within from four to eight hours and disappears within forty-eight hours. In some cases it is followed by a mild leukopenia marked by a relative mononucleosis.

The present study has been undertaken in an effort to determine the reaction of the white blood cells in individuals vaccinated with the Army triple typhoid lipovaccine.

PLAN OF STUDY

Subjects.—The subjects of the study were eighteen healthy young men who throughout the course of the investigation were student officers at the Army Medical School, Washington, D. C. Several of the subjects were at various times during the study victims of conditions such as laryngitis, pharyngitis, bronchitis, frontal sinusitis, gastro-intestinal derangements of an acute transient nature, and in one instance what appeared to be an attack of renal colic. These departures from the normal exercised very little if any influence on the curves.

Average Normal Figures.—Before the vaccine was administered, leukocyte counts were made on four

* From the Department of Pathology, Army Medical School.

1. Courmont, J., and Devic., A.: Compt. rend. Acad. d. sc. **163**: 534-535, 1916,

2. Hallion, L., and Mery, H.: Compt. rend. Soc. d. biol. **79**: 1026, 1916.

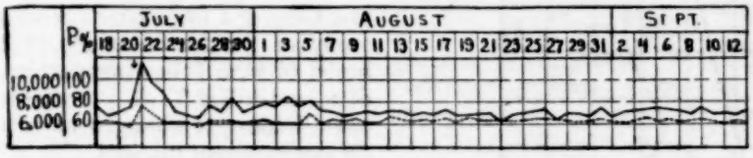
3. Mery, H., and Girard, L.: Compt. rend. Soc. d. biol. **80**: 138-140, 1917.

4. Mery, H., and Girard, L.: Compt. rend. Soc. d. biol. **80**: 140-142, 1917.

successive days for the purpose of establishing the normal figures for each individual. These counts were made in the forenoons of July 17, 18, 19 and 20.

Vaccination.—At 1 p. m., July 20, each of the subjects received 1 c.c. of the lipovaccine prepared at the Army Medical School and containing 0.4 mg. of the dried bacterial substance of each of the organisms *Bacillus typhosus, B. paratyphosus* A and *B. paratyphosus* B. Some of the subjects had been vaccinated previously, and some had not. Two of the subjects had had typhoid fever, one six years before and one eight years before. These two men (4 D and 17 U) had never been vaccinated.

Time Relationship of Counts to Meals.—It is very probable that after August 15 the variation in the leukocyte count and in the percentage of polymorphonuclear neutrophils is not dependent on the lipovaccination, but is due entirely to physiologic influences, chief among which is probably the process of digestion. An effort was made to have the subjects report for the counts at the same hour each day; but from the very first this was found to be impracticable because of the nature of the occupation of the subjects. The program of studies at the school varies from day to day, so that the men found it impossible to report at any one hour day after day, but were compelled to seize any opportunity that presented itself to report for the count. It is interesting to note that in the composite table and graphs all the little daily variations have been flattened out.



Composite graphs of the eighteen cases, showing the daily average total leukocyte count (solid line) and percentage of polymorphonuclear neutrophils (broken line). Arrow indicates when vaccine was injected.

METHODS OF WORK

Pipets.—In the beginning a different white blood cell counting pipet was provided for each individual. The pipets were not standardized, so it was considered highly advisable to employ the same pipet for each individual during the course of the study. This was made impossible in three cases by the breakage of pipets. This happened in Cases 1 A, 8 La and 9 Le. However, it would seem that the substitution of other pipets for those broken in these cases made no great difference in the leukocyte counts.

Manner of Counting Leukocytes.—The technic of counting leukocytes that we employed in this series is that which is usually used. Puncture of the finger tip or, in a few cases, of the lobe of the ear (as the patient preferred) was done with an ordinary spring lancet. The blood was drawn to the 0.5 mark of the pipet, and the diluting fluid, 2 per cent. solution of acetic acid in distilled water, was drawn to the 11 mark. The mixture was thoroughly shaken and in most instances counted within the succeeding hour, being shaken again immediately before counting. The ordinary Thoma hemacytometer with the Zappert-Ewing ruling was employed, and the cells in the four corner squares and in any one of the other squares were counted. The sum of these cells was multiplied by 40 (which is the product of 2, for the full cubic millimeter, and 20, for the dilution). Only one drop from each pipet was counted as a rule, and this was taken after the contents of the pipet had been thoroughly shaken and about one half expelled. Whenever a count appeared to be exceptionally high or unduly low, it was verified by the examination of a second drop.

Manner of Making Differential Counts.—The spreads for the differential counts were made on slides. The slides used were thoroughly cleaned by immersion for twenty-four hours in a sulphuric acid-potassium bichromate mixture. They were then washed in running hot water, immersed in 95 per cent. alcohol and dried out of alcohol.

A drop of blood of the size to give a satisfactory spread was picked up on the end of one slide and then drawn, rather than pushed, along the surface of another slide. The suggestion of Bulloch[5] was adopted in respect to leaving a free edge along the length of the slide. This edge was invariably found to be thin and very rich in well-stained, flattened out leukocytes. The spreads were permitted to dry in the air and were then fixed and stained with Wright's modification of the Romanowsky stain. The differential counts were made with a mechanical stage and an oil immersion lens, 100 leukocytes being counted in each preparation.

COMMENT ON COMPOSITE TABLE AND CHART

The average normal white cell count for the entire series, based on the average of all of the counts for the four days before vaccination, was 7,224.2. This rose on the day after vaccination to 11,758.9; then during a period of five days it fell so that on the eighth day after vaccination it was 6,575.6. Then followed an undulant rise and fall covering a period of thirteen days which reached its high points, July 29 and August 3, in counts of 8,184.4 and 8,331.1, respectively. It terminated, August 8, in a count of 6,844.7. Thereafter the leukocyte count remained at normal.

The average normal leukocyte count, based on the counts for the four days before vaccination, was 7,224.2. For the nineteen days following vaccination, during which time occurred the primary and secondary periods of elevation, the average number of white cells was 7,872.4. Then throughout the rest of the study the average count was 7,122.9. The average normal percentage of polymorphonuclear neutrophils was 60.6. It rose on the day after vaccination to 76.1, but fell so that on the third day after vaccination it was 60.8. It remained at about 63 during the rest of the study, falling below 60 on only one occasion. July 26, concomitant with a leukocyte count of 6,575.6, the percentage was 57.2.

These composite graphs show very plainly the salient features of the leukocyte reaction to this type of vaccination. There appear to be two periods of elevation of the leukocyte count, a primary rise which occurs immediately after vaccination which is followed by a gradual diminution in the white cell count over a period of five days, and a secondary rise, much less in degree than the primary but of very much longer duration. The primary rise is accompanied by a moderate polynucleosis. The depth of the fol-

5. Bulloch, W.: Tr. Path. Soc. **56**: 334-344, 1915.

lowing decline is accompanied by a mild mononucleosis. The secondary rise is unaccompanied by any change in the differential count.

SUMMARY AND CONCLUSIONS

Eighteen healthy young men were inoculated, July 20, 1918, each with 1 c.c. of the Army triple typhoid lipovaccine containing, per cubic centimeter, 0.4 mg. of the dried bacterial substance of each of the organisms *Bacillus typhosus*, *B. paratyphosus* A and *B. paratyphosus* B. For four days prior to vaccination and for fifty-six days after vaccination they were examined as to their total leukocyte and differential counts. The results of this investigation are presented in the form of a composite table and composite graphs. The study of these records makes it apparent that subcutaneous injection of the triple typhoid lipovaccine is succeeded by a rapidly appearing polymorphonuclear neutrophil leukocytosis which gradually disappears during a period of from four to six days and reappears immediately thereafter for a period of from seven to fourteen days. In exceptional cases the initial leukocytosis and the secondary leukocytosis, one or both, are followed by a mild degree of leukopenia with mononucleosis; but in the majority of cases, vaccination with the lipovaccine does not lead to diminution in the number of leukocytes or of the percentage of polymorphonuclear neutrophils, but on the contrary, actually induces a polymorphonuclear neutrophil leukocytosis, of varying degree, over a period of approximately two weeks.

COMPOSITE TABLE OF THE EIGHTEEN CASES, GIVING THE DAILY AVERAGE TOTAL LEUKOCYTE COUNT AND THE PERCENTAGE OF POLYMORPHONUCLEAR NEUTROPHILS, ETC.*

	W. B. C.	P.	S. L.	L. M.	A.	B.	T.
July 17	7,518.9	61.4	23.0	8.4	1.3	0.9	5.1
18	6,781.1	62.7	21.4	10.6	1.9	0.6	3.0
19	6,945.5	60.1	29.9	5.2	1.3	0.6	3.4
20†	7,651.1	58.3	29.6	6.3	1.7	0.9	3.2
21	11,758.9	76.1	14.1	5.4	0.9	0.2	2.7
22	9,634.4	67.2	18.9	18.1	0.7	0.2	4.9
23	8,642.2	60.8	21.6	10.1	1.3	0.9	4.7
24	7,157.8	61.9	20.8	11.1	0.7	0.3	5.2
25	6,921.7	62.1	25.7	5.6	1.9	0.4	4.1
26	6,575.6	57.2	28.8	8.2	0.6	0.4	4.8
27	7,831.1	63.1	26.7	4.8	0.9	0.6	4.5
28	7,251.1	63.9	25.9	4.0	0.8	0.9	5.1
29	8,184.4	64.3	25.6	3.5	2.0	0.4	4.1
30	7,072.0	62.4	28.2	2.9	0.3	0.1	5.5
31	7,642.2	62.7	29.3	2.6	1.2	0.5	3.2
Aug. 1	7,868.2	63.9	27.5	2.9	1.5	0.6	3.6
2	7,727.1	62.2	31.0	2.6	0.8	0.4	2.9
3	8,531.1	61.1	29.6	2.6	0.9	1.1	4.7
4	7,600.6	60.6	32.7	2.2	1.0	0.5	3.0
5	7,976.0	64.5	28.0	2.8	0.9	0.3	4.3
6	7,340.0	59.8	29.4	2.9	1.3	0.5	3.2
7	7,214.1	65.2	23.7	4.2	1.8	0.6	4.5
8	6,844.7	62.8	25.5	4.2	2.2	0.5	5.5
9	7,090.0	64.9	25.2	3.1	1.6	0.8	4.4
10	7,213.8	62.4	27.1	3.3	1.5	0.6	3.9
11	6,864.7	62.0	27.6	3.7	2.2	0.2	4.2
12	7,257.5	66.5	24.6	3.7	1.1	0.4	3.1
13	7,289.4	64.7	25.4	4.4	1.2	0.6	3.9
14	6,981.8	62.5	26.4	4.1	1.6	0.4	4.1
15	7,117.8	65.7	25.2	3.1	1.4	0.4	4.3
16	7,057.8	64.3	25.4	4.2	1.3	0.2	4.3
17	7,172.2	65.7	24.4	4.4	1.1	0.2	4.1
18	6,788.9	61.8	28.4	5.3	1.2	0.2	3.1
19	6,949.3	57.1	23.7	4.3	0.8	0.3	4.7
20	6,945.6	64.1	26.3	3.5	1.7	0.6	3.8
21	6,992.9	62.7	28.4	3.6	1.8	0.3	3.4
22	6,229.0	63.7	26.1	3.7	1.9	0.5	4.1
23	6,915.6	63.2	26.6	4.3	1.7	0.4	3.7
24	6,955.6	62.8	29.4	3.4	1.2	0.2	2.9
25	7,242.4	66.2	25.7	3.4	1.4	0.6	3.3
26	7,566.0	65.7	26.0	3.5	1.1	0.5	3.2
27	6,693.3	66.3	26.2	2.4	1.0	0.4	3.6
28	7,080.0	63.6	28.0	3.8	1.6	0.4	2.8
29	6,955.3	63.4	28.4	3.8	1.6	0.5	2.5
30	6,755.6	63.4	28.3	3.2	1.4	0.4	3.3
31	7,478.8	63.8	28.1	3.5	1.5	0.6	2.9
Sept. 1	6,807.5	61.7	28.4	4.3	1.7	0.9	2.9
2	7,150.6	61.8	29.4	4.4	1.6	0.6	2.4
3	7,446.1	63.4	29.8	3.1	0.9	0.5	2.4
4	7,486.7	64.9	27.3	3.0	1.6	0.4	3.5
5	7,570.0	63.3	27.3	4.2	1.5	0.5	3.1
6	7,487.8	63.8	26.4	4.1	1.7	0.4	4.1
7	7,423.5	64.4	24.2	4.4	1.0	0.4	4.0
8	7,015.7	64.2	27.9	3.7	1.4	0.3	2.6
9	7,586.7	65.3	26.1	4.1	0.7	0.6	3.2
10	7,057.8	62.6	28.3	4.1	1.5	0.5	2.5
11	7,290.0	60.9	29.4	4.2	1.9	0.8	2.9
12	7,002.5	62.4	29.9	3.6	1.5	0.4	2.2
13	7,312.2	60.9	26.9	4.8	1.2	1.0	4.7
14	7,417.5	63.2	28.0	4.4	2.5	0.1	1.8
First 4 days: Totals	28,896.6	242.5	103.9	30.5	6.2	3.9	14.7
First 4 days: Averages	7,224.2	60.6	26.0	7.6	1.6	0.8	3.6
Next 19 days: Totals	149,573.2	1,201.8	493.0	100.7	20.8	9.4	80.5
Next 19 days: Averages	7,872.4	63.3	25.9	5.3	1.1	0.5	4.2
Last 37 days: Totals	263,545.9	2,359.8	1,000.2	142.1	53.6	17.1	126.0
Last 37 days: Averages	7,172.9	63.8	27.0	3.9	1.5	0.5	3.4

* Key: W. B. C., total leukocyte counts; P., percentage of polymorphonuclear neutrophils; S. L., percentage of small leukocytes; L. M., percentage of large mononuclear cells; A., percentage of acidophils; B., percentage of basophils; T., percentage of transitional cells.

† Vaccine was injected at 1 p. m., July 20. The counts for that day were made shortly before the vaccine was given.

HISTOPATHOLOGY OF SUPERFICIAL BURNS*

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The purpose of this paper is to point out the findings at necropsy in fatal cases of extensive superficial burns, and the bearings of these findings on the causative factors in the production of symptoms and death.

Although much has recently been written on the treatment of superficial burns, little has been reported in recent years on the pathology. Divergent views are held as to the cause of the symptoms following extensive superficial burns, and as to the cause of death in the fatal cases. The clinical manifestations have been interpreted by some as indicating shock produced by extreme affection of the nervous system, and by others as indicating profound toxemia.

The results of the experimental work have been rather contradictory and inconclusive. Some of the experimental work points to the existence of a toxin acting in the body after extensive burning of the skin, some to loss of function of the erythrocytes and the production of thrombi as the essential factors in the causation of symptoms and death, while the work of others points to severe affection of the nervous system as the main factor. In general, the results of the experimental work indicate that if toxins are present in the tissues after extensive superficial burns they are complex and have not proved easily demonstrable.

In 1897, Bardeen[1] reported the necropsy findings in five fatal cases. In all of his cases, which were in children, death occurred within a few hours after the burns were received. In all of the cases Bardeen described rather characteristic changes in the lymphoid tissues of the body. These changes consisted in an early edematous swelling of the follicles, followed by necrosis and an accumulation of large, flat, phagocytic endothelial cells. These changes were found to be most marked in the centers of the follicles. He also noted parenchymatous degeneration of

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1. Bardeen, C. R.: A Study of the Visceral Changes in Extensive Superficial Burns, J. Exper. Med. **2**: 501, 1897.

the liver and kidneys. He states that the heart muscle was quite normal and that examination of sections from the brain, suprarenal, pancreas, thyroid and thymus revealed nothing of note. As a result of his study of these five cases, Bardeen feels that one of the main causes of death is toxemia caused by alterations in the blood and tissues.

It seemed that further study of the tissues at necropsy in uncomplicated fatal cases of superficial burns might disclose other evidences of more or less characteristic lesions resulting from selective action of any poison that might be present. The work of Bardeen suggests that the lesions described were produced by some circulating poison having a selective action on the lymphoid tissues. It would seem that a further study of such cases at necropsy and of cases in which death did not occur as soon after the burning as in Bardeen's series might throw further light on the question.

With this idea in view I have made an anatomic study of ten fatal cases of superficial burns. Of these cases, five were in children and five in adults. The ages varied from 19 months to 60 years. The interval between the time the burns were received and death varied from a few hours up to twenty days. In one case, death occurred within five hours; in three, at the end of one day; in one, at the end of two days; in one, at the end of three days; in one, at the end of four days; in one, at the end of six days; in one, at the end of sixteen days, and in one at the end of twenty days. The burns were produced in a variety of ways, including scalding, actual fire from burning clothes, explosion of a boiler, and burning gasoline.

FINDINGS AT NECROPSY

The necropsy findings in the different cases coincided to such an extent that I shall not give a detailed account of the findings in each case, but shall indicate any differences that occurred in the general description of the findings in the various tissues.

External Examination.—In all cases, large areas of the body surface showed evidences of burns. The degree and extent of the burns varied, most cases presenting areas over which the epithelium had apparently peeled off. In none of the cases was there evidence of charring.

Suprarenals.—Most prominent and characteristic of the necropsy findings were the changes in the suprarenals. The suprarenals were makedly swollen and deep red. There was marked edema of the perisuprarenal fat tissue. On section, the cortex and medulla appeared markedly swollen and showed reddish streaks suggesting congestion of the blood vessels. Certain areas appeared homogeneously deep red, suggesting extensive hemorrhage obliterating the normal markings.

On microscopic examination there was evident marked congestion of the blood vessels with scattered areas of hemorrhage penetrating among the parenchymal cells. There were in the blood vessels in some cases possible evidences of hemolysis and of thrombi, but these were not definite enough to warrant any positive statements. The gland cells were pale staining and much swollen. Many showed apparent hydrops. Necrotic gland cells being invaded by polymorphonuclear and endothelial leukocytes were not infrequent. The lesions in general were more or less comparable to the central necrosis occurring in the liver of the guinea-pig in chloroform poisoning, except that in the suprarenals the process was diffuse.

In the cases of a duration of less than twenty-four hours, the changes were slight as compared with the cases of longer duration; however, even in the five hour case there was present definite congestion and swelling of the glands. In all of the cases of more than twenty-four hours' duration, the changes in the suprarenals were very striking and apparently characteristic. In one case the left suprarenal measured 9 by 3 by 1.5 cm., and weighed 20.5 gm.; the right measured 7 by 4.5 by 2.5 cm., and weighed 25 gm. (the average normal weight being from 4 to 7 gm.). This was the case of a railroad fireman, aged 21, who received extensive superficial burns of the face, forearms, thighs and legs as a result of a boiler explosion, and died three days later. As far as I know, such marked changes in the suprarenals, at least in man, have not been observed in any other condition. About a year ago I published a note[2] describing these changes as occurring in the suprarenals in four fatal cases of superficial burns.

Kolosko,[3] in 1914, described what were apparently similar findings in the suprarenals in a number of fatal cases of extensive superficial burns. He interpreted the findings as representing hemorrhagic infarction of the glands.

Spleen.—Grossly, the spleen did not appear unusual in any of the cases unless it was that the splenic nodules appeared rather prominent in some of the cases. Microscopically, in all of the cases of less than three days' duration there were found rather characteristic lesions in the lymph nodules. Their development could apparently be studied in the lesions of different durations. Early there occurred apparent edema of the germinal centers of the lymph nodules. There was apparent necrosis of the cells of the germinal centers evidenced by karyorrhexis. Endothelial leukocytes accumulated in the centers of the nodules. These endothelial leukocytes were phagocytic for the necrotic cells and for the lymphoid cells of the nodules. Occasionally some of the endothelial leukocytes fused to form foreign-body giant cells. In many instances this process continued until the lymph nodule was represented by a large central area filled with phagocytic endothelial leukocytes surrounded by a narrow ring of lymphoid cells. These lesions apparently developed very soon after the burns were received, and were evident in all of the cases of less than three days' duration. In the cases of more than three days' duration, there were areas corresponding in distribution to the lesions described in the earlier cases. These areas were relatively homogeneous and eosin staining with occasional vesicular nuclei. At the periphery of some of these were seen occasional cells resembling the endothelial leukocytes seen in the earlier lesions. These appearances suggest that the areas represent the earlier lesions in process of hyaline degeneration and resolution or repair. The spleens in some cases showed in the blood sinuses what might be evidences of thrombi and of hemolysis; but these were not definite enough to warrant any positive statements.

2. Weiskotten, H. G.: Fatal Superficial Burns and the Suprarenals, J. A. M. A. **69**: 776 (Sept. 8) 1917.
3. Kolosko: Ueber Befunde an der Nebenniere bei Verbrennungstod, Vrtljschr. f. gerichtl. Med. 1, Supp. **47**: 217, 1914.

Lymph Nodes.—The changes in the lymph nodes correspond in all cases with changes described in the lymph nodules of the spleen. These changes were found in the cervical, bronchial and mesenteric lymph nodes. The involvement of the lymph nodes, irrespective of their location and involvement of germinal centers of the nodules, suggests that the changes are due to the presence of a poison in the circulating blood and not to a poison brought to the nodes by way of the lymph stream.

Heart.—In two cases, areas of hemorrhage were found beneath the endocardium lining the left ventricle. No other gross changes were evident in the heart. Microscopically there was evidence of injury to the muscle fibers. In four cases (one day, one day, two days and three days), there was evident hyaline degeneration of the muscle fibers. In one case (three days) there was definite necrosis of some of the fibers, with a reaction represented by an accumulation of polymorphonuclear and endothelial leukocytes. These lesions are apparently entirely comparable to the lesions occurring in the heart in diphtheria, scarlet fever and other severe toxemias.

Kidney.—No constant changes were observed macroscopically. Microscopically, in four of the cases (one day, one day, one day and two days), fibrin thrombi were present in the capillaries of the glomerular tufts. The fibrin occurred in threads and network and in solid masses more or less completely occluding the vessels. According to Mallory,[4] this type of lesion "can be produced experimentally in animals by the injection of diphtheria toxin."

Gastro-Intestinal Tract.—Four of the five cases of more than two days' duration showed punctate areas of hemorrhage into the mucous membrane of the stomach or intestine. In the case of twenty days' duration, punctate ulcers were evident in the mucous membrane of the stomach and duodenum. The lymphoid tissue of the intestine showed changes comparable to those found in the spleen and lymph nodes.

Liver.—No constant changes were evident in the liver on gross examination. Microscopically, in two cases, foci of necrosis of liver cells were evident.

Pericardial Cavity.—In the two-day case a few punctate areas of hemorrhage were evident beneath the epicardium.

Lungs.—In two cases there was found moderate congestion of the lungs, and in two cases moderate edema. Otherwise the lungs showed nothing unusual.

Peritoneal Cavity.—In three of the six cases in which death occurred within three days, there was definite congestion of the abdominal vessels. Otherwise the results of the examination of the peritoneal cavity were negative.

Other Tissues.—Of the other tissues, the pleural cavities were examined in all cases; the pancreas was examined in four cases; the thymus in five cases, and the brain in one case. Such examination showed no changes that would warrant any statement in regard to them in connection with this class of cases.

COMMENT

From these necropsy findings it is evident that there was present in these fatal cases of superficial burns a definite pathologic condition. In addition to the lesions described by Bardeen, there occurred definite and rather characteristic lesions in the suprarenals, heart muscle and kidneys. The lesions found in the lymphatic tissue and in the suprarenals are especially striking. The lesions found in the lymphatic tissues are apparently identical with those occurring in fatal cases of diphtheria and with those produced experimentally in animals by the injection of diphtheria toxin and certain other organic poisons. The changes found in the suprarenals are apparently identical with the changes occurring in the suprarenals of guinea-pigs dying several days after the injection of diphtheria toxin and like, but much more marked than those found in the suprarenals of man in fatal cases of diphtheria. The changes found in the heart muscle are also similar to those occurring in cases of diphtheria and other severe toxemias and as far as I know occur in no other conditions. The changes occurring in the liver, kidneys and intestine, although not so striking, are similar to those occurring in severe infections and toxemias. It would seem that the foregoing pathologic conditions can be explained only by the presence of a poison, circulating in the blood stream, and having more or less specific action on certain of the cells of the body. The similarity of the lesions to those occurring in diphtheria suggests that the poison is somewhat similar to diphtheria toxin, at least in its action on the cells of the body. The question as to the source of the poison in this class of cases can be determined only by further experimental work. Whether or not such experimental work will demonstrate a toxin for which an antitoxin can be produced is an important question.

The occurrence of the lesions described above in the cases in which death occurred within a relatively short time after the burns were received, and the greater severity of the lesions in these cases, indicate that they were due to the burns and not to any undiscovered complications following the burning. In connection with this matter it may be pointed out that the lesions are progressive for a relatively short period. For example, as was pointed out above, retrogression of the lesions of the lymphoid tissues begins at the end of three days, and there is no evidence of progression after this period. The same is true of the other lesions described. This suggests that the production of the poison occurs only within the first three days.

Although evidences of capillary thrombi were found in a few instances, it is obvious that the lesions found could not have resulted from the formation of such thrombi. I will not attempt to discuss the part played by so-called "shock" in this class of cases. Suffice it to say that all of the lesions found in this series of cases suggest the presence of a more or less specific circulating poison as an important factor in the production of symptoms and death.

CONCLUSIONS

1. In ten fatal cases of uncomplicated superficial burns, more or less characteristic lesions were found in the suprarenals, lymphatic tissues, heart muscle and kidneys.

2. These lesions, together with those found in the other tissues examined, indicate the presence in this class of cases of a more or less specific poison in the circulating blood.

4. Mallory, F. B.: The Principles of Pathologic Histology, 1914, p. 558.

DRUG ADDICTION

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The subject of drug addiction has come to occupy a place of considerable importance, not only in civil life but in the military and naval service as well, and constant efforts are being made to reclaim these derelicts and to prevent the spread of the habit.

In this campaign, the importance of an early and positive diagnosis of drug addiction cannot be overestimated. The addict is regarded, and rightly, as being untrustworthy, unreliable and as a particularly dangerous person to engage in any hazardous occupation. His participation in any naval or military undertaking would expose others as well as himself to the possibility of serious consequences.

From the standpoint of the prophylaxis of drug addiction, the addict himself is responsible in many cases for enlisting new recruits. This tendency to spread the habit is believed to be more prevalent than is generally recognized. In some cases it takes the form of active work in encouraging the use of drugs. There are two reasons for this activity: first, the financial gain derived from bringing in new recruits and selling them the drug, and second, the desire on the part of many addicts for company. The majority of addicts have friends or acquaintances who themselves take the drug. Many of them state that they patronize so-called "clubs" where they indulge in their favorite drug. Investigation of these places often reveals merely a room, badly furnished and ill kept, where the habitués may drop in at odd times of the day or night and relieve themselves by taking a "jab," a "sniff" or a "smoke." These places serve to keep the knowledge of drug addiction from their employers and in many instances from even their immediate family. They also allow the addict quietly to sleep off the effects of a large dose, which he may have felt he needed, without being disturbed.

A large percentage of addicts begin the use of drugs while still minors, and it is during this susceptible period of youth that contact with drug habitués is particularly dangerous. A drug addict should be regarded as a focus of infection who through contact with susceptible individuals serves to spread the habit. The average person is unable to secure drugs on his own initiative, but once his circle of acquaintances enlarges so as to include some member of this large army of noneffectives, he finds habit-forming drugs within easy reach as long as he can produce the price. The addict finds that he does well to cooperate with the distributor, and almost never will give evidence or information that discloses the source of supply. As he becomes more confirmed in the use of the drug, he realizes his dependence more and more; and particularly after running short a time or two and experiencing the pangs of sudden withdrawal of the drug, his chief aim in life comes to be the having on hand of a sufficient supply. Many of these addicts will hoard the drug and keep a supply laid away against the time when they may find it hard to procure. It is not uncommon to find the addict penniless and without sufficient clothing, food or shelter, but still clinging to his reserve drug supply, which represents to him the only means of escape from his mental and physical suffering. He pawns his own effects and those of his family, not excepting the kitchen stove, the family clock and his wife's wedding ring. Having exhausted all these resources, he begins to look outside of his own family and to pawn the effects of other people. When reduced to this state he becomes particularly dangerous to society, and will stop at nothing to secure funds with which to purchase the drug for his relief.

DIAGNOSIS

The early diagnosis of addiction will serve in great measure to curtail many of the evils of confirmed addiction and limit the spread of the scourge.

It is an almost certain rule that the drug habitué will endeavor to conceal the fact of his addiction. The instinct of self preservation prompts him to guard his secret carefully. He realizes that his employer would no doubt discharge him at once. His difficulties in procuring the drug would become greatly increased, once it became known that he was an addict. Furthermore, the fear of the law in most cases would prompt him to cover his trail by every conceivable means. In the majority of instances he realizes his own unfitness, and also that his survival depends on concealing the fact of his unfitness.

At first glance it might appear that all these efforts on his part would be useless, that his failing would be fairly easy to discover, and that the ravages caused by his addiction would be discernible to even the layman. The average person, when speaking of drug addiction, has a mental picture, possibly inspired by some stage impersonation he has seen, of an individual more or less emaciated, with sunken cheeks, sallow complexion, and marks of the needle on the arms and body, who nervously starts at the slightest sound and constantly feels himself as if to establish his own identity, who has a habit of sniffing up his nostrils, and who always carries a hypodermic syringe and the necessary ammunition in his coat pocket. While this picture may represent the habitué in some respects, particularly in the late stages of his addiction, it fails absolutely to identify the great army of drug addicts that exists in this country.

The majority of our institutions to which drug addicts are admitted and cared for are not called on to establish the fact of drug addiction. In the patients turned over to them as a rule this fact has been definitely established. In the great majority of cases the diagnosis is arrived at in one of two ways. Either the victim voluntarily seeks relief from the drug, the expense of which has become a serious burden for him, or he is caught with the drug in his possession or in the act of administering it to himself.

As a matter of fact, the diagnosis of drug addiction, contrary to the generally accepted belief, is one of the most difficult problems the physician has to meet. In many instances the habitué indulges in drugs for several years without even his family or associates being aware of the fact. If he is careful as to dosage and the time and place of taking the drug, he may proceed for years and get along fairly well. In examining drug addicts at Bellevue Hospital, this fact was frequently brought out strongly. In one case the addict, after having taken heroin for two years, married, and it was not till a year and a half later that his wife discovered he was a drug addict. He stated that he never took the drug at home but went to one of the so-called "clubs" for regular doses. On one occasion

he carelessly took a larger dose than usual, and returning home, was found asleep in a narcotized condition.

In another case, a chauffeur, employed by a physician, took heroin for six months and had no trouble. Finally, he took a larger dose than usual, and while driving the car became sleepy; after he had been roused several times, his condition became evident.

A third case that illustrates this point was that of a sailor who took morphin for more than a year aboard ship and was not suspected. His supply evidently came to him diluted with lactose, as is frequently the case. Getting a fresh supply one day that was not diluted he promptly developed symptoms of acute morphinism and was discovered.

These cases serve to illustrate the fact that drug addicts who are careful to regulate their dosage may pursue their usual occupation for years without being discovered. To establish the diagnosis in such cases, observation over a period of time is necessary. If the addicts are carefully observed, they will almost invariably show signs that lead to a positive diagnosis.

There are two periods in the daily routine of the addict that lead to discovery if unduly prolonged. The first period is ushered in by a feeling of slight nervousness or uneasiness which warns him that it is about time for another dose. If this period is prolonged, he begins to suffer more or less acutely, and cramps and muscular pains become prominent and he has the usual symptoms of sudden withdrawal of the drug. Under usual routine he never gets to this stage, as his equilibrium is reestablished by the drug. But if for any reason the supply is not forthcoming or is delayed, his predicament will usually become noticeable. The second period, during which the diagnosis is much easier, is shortly after the drug is administered and its effect is taking place.

If the addict does not measure his dose carefully, he runs the risk of getting an overdose, which frequently leads to his discovery. He becomes drowsy and may even be found sound asleep at some unusual hour, when his narcotized condition becomes apparent to his employer or to his family. These two periods will occur in the life of every addict to a greater or less degree, depending on the skill with which he regulates the use of the drug, and will tend to become more frequent, the longer he indulges. It is during one of these periods that his condition is usually discovered. He may show no marks of a needle and may stand a most rigid examination without being detected; but when kept under observation over a period of time, he will usually show unmistakable signs.

The early diagnosis of these cases and the placing of the patients under treatment is of the greatest importance to civil communities as well as to the military and naval forces of the country.

IMPORTANCE OF PREVENTION

It is coming to be recognized more or less generally that the solution of the drug addiction evil does not rest on any particular specific or cure. In fact, there is no specific for the condition. It is a comparatively simple matter to get the patient to the stage at which he is taking no more drugs, but it is a much more difficult problem to keep him from backsliding. Our great effort should be along the lines of preventive medicine, and it is here that the early diagnosis of addiction again becomes important.

It appears to be impossible to legislate drug addiction out of existence as long as the drugs themselves exist and are available. The most stringent laws that legislators have been able to enact have failed in great measure to reduce this availability. The addict better than any one else is familiar with the process of obtaining the drug. After passing through an institution for the cure of addiction he comes out with this knowledge still in his possession. If he should meet with reverses or suddenly be called on to face a trying situation, it is only natural that he should seek an outlet by a return to the drug. If the drug were not available, it does not follow that he would seek no other avenue of escape. In fact, if he feels himself unable to face the situation squarely there are several routes that he might take under these circumstances. But these avenues of escape are gradually being closed, and in most cases failure to obtain the drug after having passed through an institution for relief of the habit, and after going for some time without it, would not result in serious consequences.

DRUGS USED BY ADDICTS

Heroin appears to be the drug most easily obtained at present; as a result, the great majority of addicts are heroin users. Also, heroin admits of easy adulteration, requires no apparatus to take, and can be readily distributed. While heroin occupies a place of some importance in the equipment of the physician, it is by no means indispensable, and it could be discarded entirely without serious results.

Cocain and morphin are used by only a small percentage of addicts. The effects of cocain are rather violent, and the addict will usually state that he lost no time in shifting to heroin as soon as he could get it. He realizes that cocain is a much more dangerous drug and requires much greater care in dosage. Its effects are more frequently noticeable, and he is more liable to discovery following its use.

Morphin from the standpoint of the addict is much more desirable than cocain. It is not apt to produce the violent reactions frequently seen after a slight overdose of cocain, and the mental effect appears to be better.

However, the ideal drug for the addict seems to be heroin, and we would do well to pay particular attention to this narcotic. It does not follow that if the manufacture of this drug were stopped entirely we should have the majority of addicts under control; but we should have greatly decreased the availability of habit-forming drugs and should have removed one of the worst offenders among the narcotics.

Opium and its derivatives, ever since their action was known to man, have been the great narcotics on which the individual who feels himself inadequate to face life squarely has rested and drifted with the tide. If we dispose of heroin, it is probably from among these derivatives that substitutes will be sought.

Present Requirements of Physical Education.—We dare not be satisfied with the products of the physical education of yesterday. The value of that physical education has been grimly measured and mercilessly tested since we entered this great war. If you accept the standards of our first draft, you must admit that a rejection of 30 or 40 per cent. of our young men because they were physically unfit for military service would seem to show that our physical education has been only 60 or 70 per cent. effective.—Thomas A. Storey, M.D., State Legislation for Physical Training.

RATIONAL DRUG THERAPY *

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NEW YORK

The administration of drugs for remedial purposes should be based on a thorough knowledge of physiology, pathology and the principal physiologic actions, as well as the more important secondary actions of the drugs to be administered. The physician should always bear in mind that drugs do not cure. They may be made valuable adjuncts in our endeavor to restore normal function in an abnormally functioning organ.

In administering drugs, one should also bear in mind that the taking of medicine should not be made a punishment or a disagreeable task to the patient, and therefore it is the duty of the prescriber to administer the medicinal agent in as palatable a form as possible. Furthermore, it often happens that the desired physiologic reaction is not obtained from a given drug because of improper mode of administration, or because of failure to select from a given group of drugs the particular drug best indicated in a given case. To illustrate this, I shall take up a few groups of drugs and endeavor to show how selection may be made from the different drugs of the same group in given cases.

SOPORIFICS

In the group of soporifics we find in most textbooks chloral, its derivatives and compounds, the opium series (opium, morphin, codein, ethylmorphin hydrochlorid, heroin, etc.), and the bromids.

Let us now consider the principal action and principal secondary action of each.

The chloral group depresses the central nervous system and, eventually, completely paralyzes it. It has no specific effect on pain sensation, but it does depress the reflexes of the spinal cord, and affects last of all the medulla oblongata, and therefore practically does not depress the respiratory center to any extent. It becomes at once evident that its administration as a hypnotic in a case of insomnia due to pain would be contraindicated, while, on the other hand, it is eminently the remedy of choice in cases of insomnia due to nervous excitation, especially when such excitation is of spinal or reflex origin.

When we bear in mind, furthermore, that chloral is irritating to skin and mucous membranes, it follows logically that it should be administered in high dilution and preferably in combination with some bland substance, so that we would prescribe our chloral hydrate in combination with glycerin or mucilage of acacia and with plenty of water.

Opium and its derivatives, on the other hand, have a pronounced selective action on pain sensation and on respiration, markedly reducing both in doses too small to affect general consciousness. This is especially true of its principal alkaloid, morphin. Therefore, opium and its alkaloids are indicated as analgesics rather than as hypnotics, especially when the rate of respiration is above normal. The possibility of morphin addiction should, of course, be borne in mind.

Bromids act directly as depressants on the central nervous system, reduce the reflexes and impair the passage of impulses from the sensory to the motor cells. Therefore, in a case of sleeplessness due to a moderate degree of excitation, bromids would be indicated. But we must remember that (1) a certain degree of concentration of bromids in the circulating blood and in the tissues is required; (2) bromids are fairly rapidly eliminated, especially in the presence of chlorids; (3) bromids, like all halogen derivatives, are irritating to mucous membranes in concentrated solution, and (4) last, but not least, they have a rather disagreeable taste. Therefore, the administration of the bromids should begin some time before the desired effect is to be obtained, and frequent small doses will bring about greater physiologic response than a single large dose. When a concentration of bromids is to be maintained in the blood and tissues for some time, as in the treatment of epilepsy, the patient should be kept on a practically salt-free diet. The bromids should be administered in high dilution to prevent gastric irritation, and the taste may be corrected by the addition of acid fruit syrups or by a combination of a small amount of citric acid with simple syrup.

STIMULANTS

Turning our attention to the stimulants, we find again a number of drugs or group of drugs, each of which has its special indication. For instance, nux vomica and especially its principal alkaloid, strychnin, has selective action on the spinal cord, and its application is therefore indicated in conditions in which the ordinary normal stimuli fail to bring about the corresponding muscular response, whether of striped or unstriped muscles, generally referred to as lack of tonus.

The caffein group of stimulants must be divided into two subdivisions: caffein and its salts acting on the central nervous system as well as on the kidneys, while theobromin has but little effect on the central nervous system. Caffein produces restlessness to the point of insomnia and mental confusion, has but little effect on the circulation, and quickens the rate of respiration while at the same time decreasing its amplitude. It becomes at once apparent that in such cases as we saw in the recent epidemic of influenza, associated with or followed by lobar and lobular pneumonia, with increased rate of pulse and respiration, together with mental excitation to the point of delirium, caffein was distinctly contraindicated. If it was given with a view of aiding renal excretion, because of the oliguria found in these cases, it seems to me that the drug of choice should have been theobromin sodium salicylate, or better still, one of the many saline diuretics, such as the citrates and acetates of ammonium, sodium or potassium. On the other hand, caffein would be indicated in cases of mental or psychic depression, and particularly in cases of depression incident to poisoning.

For a similar reason, that is, its accelerating effect on the respiratory rate, atropin was contraindicated in these cases, excepting when it was desired to check secretions, as in impending edema; but its influence on secretion to the extent of lessening perspiration would also have to be considered, and for this reason morphin would probably be preferable because of its selective action in lessening all secretions except those of the sweat glands. Neither would camphor be indicated in the above mentioned cases, because in physiologic doses its effect on heart and respiration is relatively small and in larger doses may cause an acceleration,

* Read before the Bronx County Medical Society, Nov. 20, 1918.

especially of the heart rate, rather than a slowing. But the dilating effect of the camphor group on the peripheral blood vessels could well be utilized by external applications of alcoholic menthol solutions.

The group of drugs that stands out as eminently satisfactory in the conditions mentioned is the digitalis group. The principal two members deserving prime consideration are digitalis, its preparations and active principles, and those of strophanthus. One must bear in mind that absorption of digitalis from the gastro-intestinal tract is slow, and that, even after it reaches the blood, the effect on the heart is markedly delayed. But such action, once begun, is sustained for some time, while the opposite is the case with strophanthus, in which cardiac reaction is more prompt but not long sustained. Therefore, for emergency cardiac stimulation the strophanthus group is indicated, while the digitalis group has its place when conditions permit delay of reaction until the cumulative but sustained effect is reached.

IMPROPER ADMINISTRATION OF DRUGS

As an illustration of improper mode of administration of drugs, let me cite two examples. Magnesium sulphate is well known to all of us as an efficient saline laxative; but few physicians remember that the rapidity of its action is in inverse proportion to the concentration. The greater the concentration, the slower is the action, and, inversely, the less the concentration the more prompt the response. Therefore, if we wish to obtain prompt results from a dose of Epsom salt it should be administered with a large amount of water, while in cases in which delayed action is required or absorption of fluids from the tissue is aimed at, the less water used for conveying it, the better the results. This drug, too, may be made palatable by the addition of a little citric acid and sugar or by the admixture of some orange juice to the water used as solvent.

Another example of improper drug administration is furnished by the usual methods of prescribing digestants. We know that carbohydrate digestion, initiated in the mouth, is continued for some time in the cardiac end of the stomach until the gastric secretion attains a certain degree of acidity. Then, about thirty minutes after food reaches the stomach, the pepsin and rennin in the presence of the hydrochloric acid begin their enzymic action. It becomes at once apparent that the administration of pepsin and hydrochloric acid immediately after eating will inhibit any carbohydrate digestion in the stomach. Yet most prescribers direct pepsin to be taken immediately after eating. Logically they should not be taken until from thirty to forty-five minutes after eating. In the case of pancreatin medication even greater sins are committed. This collection of enzymes is normally active in the small intestine, in an alkaline medium, and begins its work in from two to three hours after eating.

Pancreatin belongs to the proteins and is subject to all the chemical laws affecting them. If introduced into the stomach at the height of its activity in a form accessible to the action of the gastric enzymes, it will, at least to a great extent, be digested and will not pass into, nor be available for its own enzymic function, in the small intestine. For these reasons pancreatin should be administered in a form in which it will not readily be acted on by the gastric secretions, that is, it should be prescribed in an enteric coated capsule, and should be introduced toward the end of the normal period of gastric digestion, which would be about two to three hours after meals. And it would surely be a mistake to administer pepsin, rennin, diastase, pancreatin and hydrochloric acid in one solution. Another thing to be remembered in connection with enzymes is the fact that alcohol inhibits their action, and therefore the administration of these in the form of elixirs or wines appears illogical.

In the time allotted for a paper which, I fear, I have more than exhausted, one is necessarily compelled to limit oneself to broad outlines, rather than to indulge in detailed minutiae. I have therefore endeavored merely to point out the possibilities of careful analysis of drug action within the realm and reach of the general practitioner of medicine.

INFLUENZA AT THE UNITED STATES NAVAL HOSPITAL, LEAGUE ISLAND, PA.

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Influenza first made its appearance in epidemic form at the U. S. Naval Hospital, League Island, Pa., Sept. 12, 1918, on which day sixty-six patients were admitted from the receiving ship extension barracks. The epidemic continued in unabated form until September 17, when the crisis was reached.

Our clinical observations were made on 600 cases of influenza of which 168 patients developed pneumonia; of the latter, forty-eight died. The disease spread more rapidly among men in barracks than among those living in tents.

In general, the prognosis in uncomplicated cases of influenza is good as to life. Several instances of acute pulmonary tuberculosis have been observed following an attack of influenza, and it is very probable that latent tuberculosis lesions are converted into active foci by the influenza infection. Influenza occurring in patients with chronic diseases, such as nephritis, is a very serious matter.

TREATMENT

No specific treatment has been found to date. A more or less routine treatment adapted to the individual requirements was carried out in this hospital with uniformly good results. On admission the patient was put to bed and magnesium sulphate ordered. Ten grains of pulvis ipecacuanhae et opii (Dover's powder), with a glass of hot unsweetened lemonade, tea or milk were then administered. A mustard plaster usually relieved the pains or oppression in the chest. If not, a small dose of codein or morphin was given. In all cases the coal tar products were withheld on account of the prostration already present. When the general muscular pains and headaches were quite severe, acetylsalicylic acid in 5 grain doses was given with benefit. Quinin was used with caution because of the possibility of middle ear disease. In practically all cases one-half ounce of liquor potassii citratis was given every three hours until the acute stage was passed. Stimulation, usually consisting of tincture of

nux vomica or strychnin, caffein and whisky were frequently employed. Whisky was not given when nausea or other gastro-intestinal symptoms were present. Water in large quantities was insisted on. The bowels were kept open daily. Food was prescribed according to the patient's appetite, regardless of fever. Certainly no good can come in starving patients so desperately in need of the proper kind of nourishment.

The treatment of pneumonia was entirely symptomatic. If Type I pneumococci could be isolated, the specific serum was employed. Glucose in 15 per cent. solution, with or without sodium bicarbonate given by rectum by the drop method is an aid in combating severe toxemia. Venesection was resorted to in a number of cases with absolutely no benefit.

USE OF VACCINES

After the nature of a drowning person grasping at a straw, a stock influenza vaccine was used as a preventive in fifty individual cases and as a curative agent in fifty other uncomplicated cases.

TABLE 1.—FORMULA OF THE VACCINE

	Per C.c.
Influenza bacillus	200,000,000
Pneumococcus	100,000,000
Streptococcus	100,000,000
Staphylococcus pyogenes-aureus	200,000,000
Staphylococcus pyogenes-albus	200,000,000
Micrococcus catarrhalis	200,000,000

As a preventive it was given every forty-eight hours for four doses. The first injection was 0.3 c.c., the second 0.6 c.c., and the third and fourth 1 c.c. In no case was there any severe reaction, and none of the individuals contracted the disease. Most of them were hospital apprentices working in wards for from twelve to fifteen hours a day. Of course, other safeguards were insisted on, such as wearing a mask continually while in the ward and observing the strictest cleanliness of the hands and body. Some few, however, who wore a mask and were not injected became victims of the infection. Let it be said here that the careful and consistent wearing of a properly fitting mask can be expected to afford a reasonably certain protection against the disease.

In the fifty uncomplicated cases treated with vaccine, none of the patients developed pneumonia, and but one developed pleuritis. After a stubborn and prolonged resistance, the pneumonia patients succumbed. The course of the disease in the others, with few exceptions, was definitely shortened, and prostration seemed less severe. The patients apparently not benefited were those admitted from four to seven days after the onset of their illness. These were out of all proportion to the number of pneumonias that developed and the severity of the infection of the control cases. The effects were always more striking, the earlier the vaccine was administered.

The number of patients treated with vaccines and the number immunized with it is entirely too small to allow of any certain deductions; but so far as no untoward results accompany their use, it would seem unquestionably safe and even advisable to recommend their employment.

LABORATORY STUDIES

The bacteriologic studies of this epidemic made thus far have not been conclusive, though most of the observers have demonstrated *B. influenzae* in a considerable proportion of their cases.

Little, Garofalo and Williams[1] failed to find *B. influenzae*, but did find a gram-negative diplococcus in all their cases.

Gotch and Whittingham[2] have found *B. influenzae* in 8 per cent. by cultural methods and in 62 per cent. in stained smears from the sputum, and attributed the infection to a gram-negative coccus, "perhaps in association with the influenza bacillus."

Averill, Young and Griffiths[3] were able to cultivate the Pfeiffer bacillus from the sputum.

Matthews,[4] using a trypsinized blood agar medium, found this organism in all of twelve cases studied. His cultures were made from the nasopharynx by means of the test tube.

Martin[5] found the influenza bacillus both in smears and in cultures and believes the epidemic to be true influenza.

Krumbhaar[6] takes issue with Little, Garofalo and Williams, finding *B. influenzae* in three fourths of a small group of cases.

Keegan,[7] in this country, had rather unsatisfactory results from sputum cultures and mouse inoculations, but found *B. influenzae* in some of his cases. In cultures from the lungs, however, in twenty-three cases, he was able to isolate the organism in 82.6 per cent., 31.6 per cent. being pure cultures.

Barnett[8] made several unsuccessful attempts to isolate the organism from the sputum and nasopharyngeal smears at a naval base in Scotland.

It is well to repeat, however, what has been pointed out before,[9] that the causative organism was not discovered during the epidemic of 1889, but in 1892, when Pfeiffer demonstrated the bacillus that bears his name.

In the studies conducted at the League Island Hospital, the medium used was unlaked human or rabbit blood agar titrated to plus 0.5 and citrated bouillon, containing blood and having the same reaction.

One hundred and five cultures were made from the sputum, thirty-four from the nasopharynx, eleven from the laryngeal region and eleven from the eye. In only four cases was *B. influenzae* isolated in pure culture, though in some twenty cases an organism similar in morphology and staining characteristics was present, all obtained from the sputum. Stained smears of sputum showed an organism resembling the Pfeiffer bacillus in a good percentage of the cases studied. Numerous other organisms were found, the most important being the pneumococcus in the majority of the cultures, streptococci, the nonhemolytic strain predominating, *Micrococcus catarrhalis* and staphylococcus.

The presence of these organisms, especially the pneumococcus and streptococcus, while of no very great significance, is interesting in view of the very common complication of pneumonia.

Blood cultures were negative in all but one of twenty-six cases. In this instance, a case of pneumonia in which the patient was moribund at the time, a Type

1. Little, T. R.; Garofalo, C. J., and Williams, P. A.: Lancet **2**: 34, 1918.
2. Gotch, O. H., and Whittingham, H. E.: Brit. M. J. **2**: 82, 1918.
3. Averill, C.; Young, G., and Griffiths, J.: Brit. M. J. **2**: 111, 1918.
4. Matthews, John: Lancet **2**: 104, 1918.
5. Martin, C. J.: Brit. M. J. **2**: 281, 1918.
6. Krumbhaar, E. B.: Lancet **2**: 123, 1918.
7. Keegan, J. J.: The Prevailing Pandemic of Influenza, J. A. M. A **71**: 1051 (Sept. 28) 1918.
8. Hewlett, A. B., and Alberty, W. M.: Influenza at Navy Base Hospital in France, J. A. M. A. **71**: 1056 (Sept. 28) 1918.
9. Bacteriology of the Influenza Pandemic, editorial comment, Brit. M. J. **2**: 139, 1918.

IV pneumococcus was isolated. The blood was planted in agar and citrated bouillon and cultivated under both aerobic and anaerobic conditions. The results of this study were somewhat disappointing so far as the demonstration bacteriologically of *B. influenzae* as the etiologic factor in the epidemic at this station was concerned. This may have been due to unfamiliarity with the organism and inappropriate culture mediums, though in cases in which positive growths were obtained, the organism was not especially difficult to find and it grew readily on the medium.

PNEUMONIA

Forty-two cases of pneumonia were studied by the Avery method for type determination. In twelve specimens of sputum the results were unsatisfactory,

TABLE 2.—TYPE DETERMINATION BY AVERY METHOD

	Number	Per Cent.
Type I	7	16⅔
Type II	7	16⅔
Type III	5	12
Type IV	11	26
Unsatisfactory	12	28

the bouillon cultures showing streptococci, gram-negative bacilli similar to the influenza bacillus, both in association with other organisms, and few, if any, pneumococci.

In one fatal case both a Type II and a Type III pneumococcus was found.

Tables 3 and 4 give the results of the leukocyte and differential counts in uncomplicated influenza and in influenza complicated by pneumonia and pleurisy.

From the tables it will be seen that in uncomplicated influenza the tendency is toward leukopenia, this being well marked in some cases. In the pneumonias complicating influenza, leukocytosis was present in the majority of instances.

TABLE 3.—BLOOD COUNTS IN INFLUENZA

Case	Number of Leukocytes	Polymorphonuclears, per Cent.	Small Mononuclears, per Cent.	Large Mononuclears, per Cent.	Eosinophils, per Cent.
1	6,000	75	20	5	..
2	16,800	85	12	3	..
3	8,000	83	9	8	..
4	8,000	54	48	8	..
5	6,500	78	19	3	..
6	9,000	78	20	2	..
7	5,200	35	28	7	..
8	7,800	59	14	26	1
9	8,200	70	25	5	..
10	4,300	65	22	12	1
11	4,550	68	28	4	..
12	9,000	80	15	5	..
13	8,600	46	30	21	3
14	8,000	48	23	2	28
Average	7,782				

Of three pneumonia patients with leukopenia, two recovered and one died. Of four with a normal blood count, one died. Five of those with leukocytosis died. The differential counts had nothing characteristic about them. One patient, showing eosinophils, subsequently developed otitis media and mastoiditis.

URINALYSIS

The urine of 225 patients was examined; 150, or 66 per cent., contained albumin, and eighty-three, or 37 per cent., casts. Pus cells and leukocytes also were quite common. These findings are an index of the effects of the toxemia on the kidneys, producing distinct kidney irritation even to the extent of well marked parenchymatous change. It is well to remember, though, that the cases of those sent to the hospital were, as a rule, more severe than many treated in the various sick bays at this station.

NECROPSIES

Unfortunately we were able to secure but two necropsies, both of patients dying from pneumonia.

CASE 1.—Consolidation of a dark red, glazed, "meaty" appearance involved the dependent third of the lungs with a fibrinous exudate of mild degree on the corresponding pleural surface. The air-containing portions of the lungs were edematous.

The kidneys presented acute parenchymatous nephritis.

The other organs were not changed to any important extent. Cultures from the heart's blood, lungs and spleen yielded a Type IV pneumococcus.

CASE 2.—There was a consolidation in the lower lobe of the left lung, with slight involvement of the pleura. On the right side, in addition to almost complete consolidation of the middle and lower lobe, there was a large area of consolidation in the upper lobe.

The cut surfaces of these consolidations were similar, presenting a mosaic of dark red, glazed areas, grayish red gran-

TABLE 4.—BLOOD COUNTS IN INFLUENZA COMPLICATED BY PNEUMONIA AND PLEURISY

Case	Number of Leukocytes	Polymorphonuclears, per Cent.	Small Mononuclears, per Cent.	Large Mononuclears, per Cent.	Eosinophils, per Cent.
1	15,400	83	14	3	..
2	17,600	76	18	6	..
3	17,000	85	12	3	..
4	4,800	76	22	2	..
5	12,600	84	16	..	..
6	32,000	76	20	4	..
7	18,000	87	10	3	..
8	9,000	75	22	3	..
9	5,000	76	21	3	..
10	8,000	74	26	6	..
11	18,900	75	16	7	2
12	8,000	69	17	4	..
13	12,800	81	18	1	..
14	19,400	80	15	5	..
15	12,000	82	14	4	..
16	15,800	76	16	8	..
17	15,800	76	21	3	..
18	15,800	76	18	6	..
19	17,200	70	24	6	..
20	13,800	78	19	3	..
21	9,000	65	31	4	..
22	4,900	50	50	..	..
23	16,600	81	16	1	2
24	12,800	84	12	4	..
25	14,200	86	11	3	..
26	24,600	84	13	3	..
27	20,800	85	12	3	..
28	23,400	88	8	4	..
29	33,700	84	14	2	..
30	18,000	84	9	7	..
31	25,000	93	4	3	..
32	19,400	78	15	7	..
33	14,400	84	12	2	..
34	14,600	85	6	9	..
35	15,400	79	16	5	..
Average	15,906				

ular ones, others more of the character of gray hepatization, and some showing a softened exudate, suggesting beginning resolution. This, in our opinion, indicates that the lesion was essentially a bronchopneumonia that had by extension become lobar in distribution.

On the right side there was also a serofibrinous pleuritis, with extensive fibrinous exudation.

The kidneys were the seat of well marked parenchymatous changes, and the spleen was moderately enlarged.

Cultures from the heart's blood, both lungs, right pleura and spleen yielded a Type IV pneumococcus.

In neither necropsy was the influenza bacillus isolated.

Infant Mortality and Welfare.—The infant mortality rate is considered the most sensitive index we possess to social welfare. It reflects at once conditions which improve or interfere with the normal health or life of the community. As conditions which make for normal family and community life are improved, the infant death rate decreases. When these conditions are disturbed, the rate correspondingly increases. The infant mortality rate, therefore, may be taken as the barometer of the social welfare of the community.—Handbook of Child Hygiene, Kansas State Board of Health.

THE RELATION OF BRONCHOPNEUMONIA TO INFLUENZA

A PRELIMINARY REPORT

By THE CAMP LEWIS PNEUMONIA UNIT*

CAMP LEWIS, AMERICAN LAKE, WASH.

The spread of the so-called "Spansh influenza" epidemic in the various cities and military camps during recent months has been the concern of the medical profession and of the laity alike. Current medical literature deals largely with the subject. The death rate from influenza and its complications in the Army cantonments alone probably exceeds that of the American Expeditionary Forces from all other causes.

When the epidemic reached Camp Lewis, we had at the base hospital a well organized pneumonia unit. This unit was composed of assistants and ward surgeons on the medical service, a laboratory personnel with a day and night service, and an efficient roentgen-ray service. No case of pneumonia was reported unless the findings of the ward surgeon were confirmed by the chief of the medical service or an assistant. In all cases of pneumonia or suspected pneumonia, a sputum study, white blood and differential count, blood culture and urine examinations were made as a routine. Each patient was roentgenographed, unless the condition was critical on admission. Postmorten examinations were made in practically every fatal case.

Early in the epidemic we were forcibly struck by the atypical signs of the pneumonia with which we were confronted. The usual signs of pneumonia in young adults were conspicuously absent. Frank consolidation with high temperature was the exception rather than the rule. The onset of the disease was atypical. Most of the patients gave the more or less typical and accepted history and symptoms on which a diagnosis of influenza are based. They complained of generalized muscle and joint pains, headache, slight dryness of the throat, pains beneath the sternum, and usually a dry and unproductive cough. Rarely was there a history of a sudden and definite chill. In only the most severe cases was there a history of rusty or bloody sputum. On admission the temperature in a majority of cases varied from 99 to 101 F.; the pulse was normal or only slightly increased; the respirations, except in the most severe cases, rarely exceeded 28 per minute, and the distress was usually slight.

On physical examination, the findings were not marked. Usually there was found a slight diminution in resonance over one or both lung bases posteriorly. The breath sounds were variable. Bronchial breathing and pectoriloquy were rarely present. In some cases the breathing was harsh or bronchovesicular, accompanied by an increase in fremitus. In other cases the breathing was diminished with a decrease in fremitus. On deep inspiration, in either type of case, a shower of fine moist or crepitant râles was almost invariably heard over the area of diminished resonance.

From these early and indistinct signs, the course rapidly changed. Within from forty-eight to seventy-two hours there was either a marked extension of the process with definite although atypical signs of a diffuse bronchopneumonia, or the temperature had dropped to normal and the lungs showed signs of resolution. In the more severe cases the temperature remained elevated with only slight increase in pulse and respiratory rate for several days. The temperature then fell by lysis to normal. In the fatal cases the process extended to several lobes or all lobes of both lungs. In the most extensive cases, bronchial breathing and pectoriloquy were occasionally noted.

Laboratory study showed a consistently low white blood count, being usually under 10,000 cells per cubic millimeter, with only slight changes in the differential count. Sputum examinations revealed very uniformly Type IV pneumococcus with a nonhemolytic streptococcus. The other types of pneumococcus or the hemolytic streptococcus were rarely found, in contrast to the almost constant incidence of the hemolytic type of streptococcus in the cases of pneumonia in the spring of 1918. Influenza bacilli were found in only a few cases early in the epidemic. Blood cultures in 825 cases were positive in twenty-four, or 2.9 per cent.; of these, twenty cases showed pneumococci, one hemolytic streptococcus, and one nonhemolytic streptococcus.

Postmortem examinations revealed a bronchopneumonia of varying degree, but usually extensive and involving one or both lower lobes, sometimes associated with involvement of other lobes in all combinations. The process was characterized by scattered areas of pneumonic consolidation varying in size, the larger areas resulting from the coalescence of smaller ones. Frequently the entire lobe or lobes would show consolidation, giving the appearance of a lobar pneumonia. The latter type early in the epidemic led us to make a diagnosis clinically of lobar pneumonia; but further study showed that we were dealing with a coalescent bronchopneumonia. In every case coming to postmortem examination, the presence of a pneumonic process was clearly demonstrated.

Throughout the study the use of the roentgen ray has been invaluable. It was possible in many cases to show by this method the extension of a relatively small and indefinite area of haziness at the base of one or both lungs to a complete involvement of all lobes of both lungs. In contrast to this, however, it was possible to show cases presenting similar areas which did not progress but slowly resolved after the return of the temperature to normal. With the large number of cases studied it has been possible to show all gradations of the process. Frequently the roentgenographic findings revealed a rather extensive process which showed only slight signs on physical examination until from twenty-four to forty-eight hours later. On the other hand, cases in which the physical signs were fairly well marked occasionally showed only moderate changes in radiability. These discrepancies have been explained by the situation of the pneumonic process in the lung tissue, confirmed by stereoscopic plates and postmortem examinations.

SUMMARY

The recent epidemic at Camp Lewis was an acute respiratory infection and not an epidemic due to *Bacillus influenzae*. The acute respiratory infection was characterized by atypical physical signs and extreme variation in virulence.

From the large number of cases studied clinically, roentgenologically, bacteriologically and at postmor-

* The pneumonia unit was composed of: Medical Service: William J. Kerr, Captain, M. C., chief of the service; Assistants: Harvey M. Slater, Captain, M. C.; Hugh K. Berkley, Captain, M. C.; T. Homer Coffen, Captain, M. C.; Thomas G. Clement, Captain, M. C. and ward surgeons. Laboratory Service: Kenneth J. Staniford, Major, M. C.; chief of the laboratory service; Marcus C. Terry, Captain, M. C. Roentgen-Ray Laboratory: F. E. Diemer, Captain, M. C., head of roentgen-ray laboratory and staff.

tem, it appears amply demonstrated that the process, whether mild or severe, is etiologically and pathologically the same; that there are all gradations from a slight involvement of the bronchioles with adjacent alveolar infiltration to an extensive involvement of entire lobes simulating lobar pneumonia; and that the cases were mild or severe, depending on the resistance of the individual or variations in the virulence of the organism, rather than the accepted idea that pneumonia complicated one case and not another.

ANTHRAX AT EMBARKATION HOSPITAL, NEWPORT NEWS, VA.

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In view of the recent occurrence of anthrax in the various Army camps, an account of the cases observed at the Embarkation Hospital, Newport News, Va., should be of interest:

REPORT OF CASES

CASE 1.—*History.*—A soldier, admitted to the hospital, May 25, 1918, with the transfer diagnosis of mumps, had had headache, May 23, and then noticed a small papule on the left cheek. While shaving, he cut the papule, which bled freely. His face started to swell the same afternoon. Headache increased, then the throat began to swell, deglutition was painful, he had nausea and vomiting, and he felt very chilly. There was a nodule on the left cheek the size of a quarter, with a dark cherry eschar, with a well defined, elevated margin. The temperature was 102.6, the pulse 104, and respiration 28. Two hours later the temperature was 103.4. Anthrax bacilli were demonstrated in smears.

Operation.—May 25, the nodule was excised under local anesthesia, the base cauterized with pure phenol (carbolic acid), 5 per cent. phenol injected into the subcuticular tissue around the excised area, and a 95 per cent. alcoholic dressing kept continuously applied. The wound was dressed every twenty-four hours. The base was cauterized with pure phenol until the edema subsided, and then with 5 per cent. phenol until pure granulations developed. After twenty days, repeated culture failed to demonstrate bacilli, when, under local anesthesia, skin grafting was performed. The patient returned to duty, July 4, with the wound healed.

Comment.—After the operation, the swelling increased for thirty-six hours, extending to the supraclavicular glands; there were no kidney complications. The temperature became normal, May 29, with no subsequent rise. Medical treatment was given from a symptomatic standpoint. Aside from the smear, no laboratory work was done in this case.

CASE 2.—*History.*—A soldier, admitted, June 6, 1918, with the transfer diagnosis of parotitis, had noticed, two days prior, a papule on the right cheek, which he picked. Swelling began and very rapidly extended down the neck. There was a pustule, the size of a green pea, with a deeply indurated margin, rather blurred and studded with vesicles, and a dark cherry center. The induration was out of proportion to the nodule. There were no marked constitutional symptoms. A smear showed anthrax bacilli. The patient stated that he had been wearing a chinstrap which rubbed this papule. The temperature was 100.2, the pulse 90, and respiration 20. June 8, the temperature was 104.4, the pulse 110, and respiration 26.

Operation.—June 6, under local anesthesia, the nodule with an indurated area the size of a half dollar was excised, with the same after-treatment as in the preceding case. The patient's temperature of 104.4, June 8, gradually receded until it became normal, June 11. Skin grafting was performed, July 5. The patient was returned to duty, August 3, with a very small area remaining unhealed.

Comment.—This was a normal case with rather marked swelling and great reaction following operation. The organisms in this case were obtained in both smear and culture.

CASE 3.—*History.*—A soldier, admitted, July 15, 1918, with undetermined diagnosis, had noticed a small papule, July 11, which itched. He scratched it several times that night. Next day, he noticed a small lump (induration). He ached all over as if he had the grip. The lesion itself was not very painful. The swelling increased. July 13, he reported on sick call. He remained in quarters, July 14, and was sent to the hospital. Smear on admission was positive. He says he went on a hike, July 11, and slept that night on some of his equipment, which put a leather strap against his cheek. July 11, he used a new shaving brush.

Findings.—On the right cheek, at the margin of the lower jaw, there was a black eschar about one-half inch in diameter, with an induration about 1½ inches across. The eschar was surrounded by a yellowish border and numerous vesicles and edema involving the neck, chiefly on the right side. The temperature was 102.2, the pulse 120, and respiration 24. July 16, the temperature was 98, the pulse 70, and respiration 20. There was fever for only twelve hours after admission.

Operation.—July 15, excision of the nodules the size of a silver dollar and the usual operative technic were carried out. Edema disappeared after five days. July 20, phenol was discontinued and physiologic sodium chlorid solution used. Edema reappeared; under phenol it again disappeared. August 18, phenol was discontinued and again the edema appeared, to disappear after the use of phenol. September 19, 40 c.c. of antianthrax serum were given subcutaneously with local swelling; September 23, 40 c.c. of antianthrax serum were given, and irritable heart developed. The patient complained severely, but no pathologic condition was produced. The serum was discontinued; local applications were continued; healthy granulations rapidly formed. At present the wound is practically healed.

Comment.—There was a very slight reaction following the operation. This case was a very stubborn one. On administration of anthrax serum, there was a local reaction about the site of the wound. Organisms were obtained from smear, culture, and the following tissues: from inoculated guinea-pig, blood stream, liver, heart, spleen, and site of inoculation. The guinea-pig died within thirty-six hours after inoculation.

CASE 4.—A soldier, admitted, Sept. 21, 1918, with the transfer diagnosis undetermined, had noticed a papule, the day before, on the left side of the face; next day there was edema on one side of the face, but very little pain. He reported on sick call and was sent to the hospital. He arrived at this camp, September 19. He slept on a leather seat and had been using a new shaving outfit, but destroyed it before coming to the hospital.

Findings.—Over the angle of the left side of the lower jaw was a black eschar about 2 cm. in diameter, surrounded by a ring of small vesicles of a dirty dark yellow; there was induration about 1 inch across, and immense edema of the left side of the face, neck and the upper third of the chest. On admission, the temperature was 102, the pulse 112, and respiration 20. After operation the temperature rose to 103.2, the pulse 120, and respiration 18.

Operation.—September 21, excision of the nodule the size of a silver dollar, with the usual technic, was carried out. In addition, 40 c.c. of serum were given. September 22, edema increased, closing the left eye and involving the upper half of the chest; there was slight delirium. September 23, the edema was unchecked. The patient had difficulty in swallowing. Forty c.c. of serum were given intravenously, and repeated four hours later; there was no reaction from the serum. September 25, the edema was subsiding. September 28, the edema had about disappeared. The same treatment was continued with subsidence of all symptoms. The wound at present is rapidly granulating.

Comment.—This was the most severe infection, and the only one producing any delirium. In this case infection

was not combated until injections of anthrax serum were used, after which there was a general subsidence of symptoms.

SUMMARY

1. The source of infection was not definitely determined. In two cases, cultures of toilet articles, especially shaving brushes, were made, with no growth. Unfortunately the others were destroyed before we could get them. All the patients wore chinstraps of leather. One had slept, using his haversack as a pillow. Another used a leather seat on the train as a bed. None had been around animals of any kind.

2. The operations were performed under local anesthesia, without any attempt to control hemorrhage, as loss of blood from the site of infection was advisable. Cauterization and injection of 5 per cent. phenol into the cellular tissue, followed by continuous alcohol dressings, are indispensable. Skin grafting decreased the period of convalescence by weeks.

3. Antianthrax serum was of benefit in one case. It was used in only two of our cases, being discontinued in one after rather severe reaction.

4. Guinea-pigs died within thirty-six hours after inoculation.

ANTHRAX AT CAMP DODGE, IOWA

REPORT OF THREE CASES, WITH BACTERIOLOGIC AND BLOOD STUDIES *

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The literature of anthrax reveals surprisingly meager attention paid to blood culture and cell count studies in this infection. The results of such studies in the cases here recorded may therefore prove of interest. The three soldiers of this camp affected with anthrax were admitted to the base hospital between Sept. 6 and Sept. 19, 1918. Of these, one died and two recovered. Two days previous to the earlier date a soldier had died immediately on entering the receiving ward, in whom the necropsy showed extensive intestinal anthrax.

REPORT OF CASES

CASE 1.—Private A. C., white, aged 30, admitted, Sept. 12, 1918, had entered the service one week before. Before entering the service, he had been a car repairer. September 6, he noticed a pimple on the left cheek which was slightly painful. Three days later the pain was considerable and the lesion was discharging bloody serum. A few days before the appearance of the furuncle he had used a new shaving brush. Examination revealed a rather superficial induration the size of a dollar situated on the left cheek, 5 cm. from the angle of the mouth, with a dark red central eschar the size of a finger tip, discharging a serosanguineous fluid. The glands of the neck were not enlarged. The temperature was 98, the pulse 78, and respiration 22. Two cm. of 5 per cent. phenol solution were injected around the areola and 50 c.c. of pneumococcus serum (Rockefeller) given intravenously. Forty-eight c.c. of the serum were similarly given on the following day. This serum was administered in this and the other two cases by the attending ward surgeons because it was the only horse serum available, antianthrax serum not being immediately obtainable. Two days later the swelling began to subside and at the end of two weeks had disappeared. A mild conjunctival and nasal catarrh appeared eight days after the administration of the serum, which lasted a few days, followed by a general anaphylactic urticaria which persisted for a week. The temperature never rose above 99.6. Smears and cultures from the lesion were positive on the first two days and negative on the five succeeding examinations (Table 3). Daily blood counts revealed no leukocytosis (Table 1). The anthrax bacillus was demonstrated in culture of the shaving brush bristles, but this is not of value, as the patient had used the brush after the development of the lesion. Daily blood cultures were negative (Table 1).

CASE 2.—Private P. B., white, aged 21, admitted, Sept. 11, 1918, had been a farmer before entering the service, but had not handled animals with discharging sores. He had used his present shaving brush two months. September 8, he experienced frontal headache and on the following day noticed a pimple on the left side of the neck about midway between the angle of the jaw and the chin. The swelling about the lesion began to increase at once, and there was pain which radiated down the left side of the chest and was aggravated by coughing. On admission the patient stated that he had vomited earlier in the day, and complained of severe headache and left pectoral pain aggravated by coughing and on deep breathing. The temperature was 101, the pulse 112, and respiration 26. On the left side of the neck immediately below the middle of the border of the inferior maxilla was an indurated area about the size of a quarter in the center of which an eschar with irregular edges and about the size of a dime was seen. Several vesicles surrounded the eschar and a serosanguineous fluid exuded from under it. An inflammatory and edematous areola surrounded the lesion and extended to the zygoma above and the clavicle below. This spread within a few hours to the hairline above and the level of the nipple below. There was also some extension to the right side of the neck. Except for a few moist râles over the left base, the lungs were negative. A smear from the discharge on admission showed the presence of the anthrax bacillus, and a pure growth was obtained on culture (Table 3). Three hours after admission, serum treatment was begun. Pneumococcus serum was given as follows:

September 11: 2:30 p. m., 20 c.c. subcutaneously in the pectoral region; 7 p. m., 30 c.c. subcutaneously in the pectoral region.

September 12: 11:30 a. m., 50 c.c. subcutaneously in the gluteal region; 6:30 p. m., 50 c.c. subcutaneously in the gluteal region.

September 13: 10:30 a. m., 85 c.c. intravenously.

On the evening of September 11, 0.5 c.c. of a 5 per cent. phenol solution was injected around the margin of the indurated area. The edema and inflammation began to subside, September 12, and had disappeared on the 14th. A few days later the induration and discharge were also gone, leaving a dry, black eschar, which had entirely healed, September 26. Slight cervical glandular swelling persisted until the patient's discharge, October 6. Blood cultures were positive for *B. anthracis*, September 11, 12 and 13, and negative thereafter. This, together with the daily white cell count, is shown in Table 1.

CASE 3.—Recruit G. N., white, aged 29, admitted, Sept. 19, 1918, had entered the service two weeks before. He had been a farmer. Some of the cattle he had handled had had "pinkeye," but were not otherwise affected. September 16, while on the drill field, he noticed a papule on the right side of the neck near the angle of the jaw. On the following day he pricked the pimple, drawing blood and pus. On the next day he cut the sore while shaving with a razor which he had purchased at the regimental exchange ten days before. Soon after this the tissues around the lesion began to swell. On admission the patient complained of headache, and alternating hot and cold sensations. The temperature was 98, the pulse 78, and respiration 20. An indurated, slightly inflamed area about 7 cm. in diameter, with a central ulceration containing seropurulent fluid and covered with dried coagulum, was situated at the angle of the lower jaw on the right side. The cervical glands were enlarged. Moist râles were heard at both pulmonary apexes, and there was slight tenderness in the lower abdomen. A smear and culture made

* From the Laboratory of the Base Hospital.

from the lesion on admission showed the presence of the anthrax bacillus. Four hours after admission the administration of serum was begun and given as follows:

September 19: 3 p. m., 50 c.c. of pneumococcus serum intravenously.

September 20: 9 a. m., 50 c.c. of pneumococcus serum intravenously; 10 p. m., 75 c.c. of pneumococcus serum intravenously.

September 21: 3 p. m., 35 c.c. of antianthrax serum intravenously.

September 19, at 5 p. m., 1 c.c. of 5 per cent. phenol solution was injected around the margin of the indurated area. September 21, the swelling extended to just above the root of the neck and about 2 inches to the left of the midline, causing some degree of dyspnea. The pulse was of poor quality. There was considerable epistaxis. The patient was restless throughout the following night. September 22, the epistaxis was repeated, and there was nausea, vomiting and abdominal pain. The pulse, however, was improved. The lungs were negative. The induration was somewhat smaller and the patient seemed on the whole better. Cultures were made that day of the vomitus and feces for the anthrax

TABLE 1.—BLOOD STUDIES

Date	White Blood Cells	Neutrophils	Small Lymphocytes	Large Lymphocytes	Basophils	Eosinophils	Blood Culture
Case 1:							
9/13/18	8,000	86	10	..	..	4	Negative
9/14/18	6,400	73	17	1	..	9	Negative
9/16/18	6,400	68	23	1	..	8	Negative
9/17/18	6,400	75	20	1	..	4	Negative
9/18/18	6,200	72	18	2	..	8	Negative
9/19/18	6,800	66	22	..	2	10	Negative
9/20/18	7,200	70	18	..	..	12	Negative
9/21/18	6,600	66	20	2	..	12	Negative
9/22/18	8,000	64	22	..	2	12	Negative
9/23/18	9,000	70	18	4	..	8	Negative
9/24/18	8,000	70	20	..	2	8	Negative
9/25/18	8,000	70	18	2	..	10	Negative
9/26/18	8,000	70	22	..	..	8	Negative
Case 2:							
9/11/18	9,000	..	..	..	..	..	Positive
9/12/18	15,800	83	14	2	1	..	Positive
9/13/18	10,000	76	16	6	..	2	Positive
9/14/18	7,000	70	22	4	..	4	Negative
9/16/18	8,000	75	19	2	1	3	Negative
9/17/18	8,200	73	22	1	..	4	Negative
9/18/18	8,600	74	24	..	..	2	Negative
9/19/18	8,400	66	24	5	..	5	Negative
9/20/18	8,400	74	22	..	..	4	Negative
9/21/18	8,000	76	22	..	..	2	Negative
9/22/18	8,000	74	23	..	..	3	Negative
9/23/18	8,000	66	24	4	..	6	Negative
9/24/18	7,600	76	18	..	1	5	Negative
9/25/18	7,400	74	22	..	..	4	Negative
9/26/18	7,800	70	22	3	..	5	Negative
Case 3:							
9/19/18	8,400	78	18	2	1	1	Positive
9/20/18	9,800	80	16	1	1	2	Positive
9/21/18	12,400	87	11	2	..	..	Positive
9/22/18	16,000	84	16	..	..	..	Positive
Died.							

bacillus, the former proving negative and the latter positive. Bismuth subnitrate was given to control the vomiting. On the night of September 22, the patient was worse and was stimulated with strychnin and digitalis. He became extremely restless and somewhat delirious, and died at 6 a. m. Necropsy revealed involvement of Peyer's patches and the solitary nodules and considerable peritoneal exudate (about 1,500 c.c.). *B. anthracis* was recovered from the peritoneal exudate and obtained in pure culture from the heart's blood. The results of the blood studies in this case are given in Table 1.

Table 1 gives the results of the blood cultures, white blood count and differential cell count in all three cases. These were made daily until death in Case 3 and to recovery in Case 1 (except the third day). In Case 2, differential cell counts were made every day to recovery except on the first and fifth days of the disease, and blood cultures were taken daily to recovery except on the fifth day of the disease.

In making the blood cultures, about 12 c.c. of blood were placed in 150 c.c. of 0.5 per cent. glucose bouillon and incubated at 37.5 C. for twenty-four hours. A human blood agar plate and a tube containing 10 c.c. of 0.5 per cent. glucose bouillon were then inoculated from this culture and incubated at 37.5 C. In Case 3, these were positive at the end of twenty-four hours. In Case 2 the blood culture taken on the first day was negative at the end of the twenty-four hours' incubation, but positive after forty-eight hours. On the two subsequent days the blood cultures in this case were positive after twenty-four hours' incubation. In Case 1 no growth could be obtained from the blood culture at any time.

A study of Table 1 emphasizes the following interesting points:

1. The leukocytosis runs concurrently with the blood culture findings. Thus, Case 1, with blood cultures negative throughout the course of the disease, shows no leukocytosis at any time. Case 2 shows an increased white cell count on the first three days when the blood cultures were positive, falling to, and remaining at, normal as the blood cultures remained negative. In Case 3 a persistently positive blood culture runs parallel with a constantly rising leukocytosis, which is highest just before death.

2. The eosinophil count is in inverse proportion to the severity of the infection. Thus, in Case 1, the mildest, the average daily eosinophil count for the thirteen days is 8.5. In Case 2 the average for the first three days, which represent the more active stage of the disease, is 1; the average for the subsequent eleven days, representing the declining stage, is 4. In Case 3, with a high grade infection throughout, the

TABLE 2.—AVERAGE DAILY COUNT

	White Blood Cells	Neutrophils	Eosinophils
Case 3	11,650	82	1
Case 2:			
During first three days	11,600	79	2
During subsequent days	7,900	72	4
Case 1	7,300	70	8.5

average eosinophil count is 1. This is shown more graphically in Table 2, in which the daily average for the three cases is computed from the figures in Table 1.

Case 1 was examined for intestinal parasites as a possible cause for the eosinophilia and found negative.

It may be of interest to note that the leukocytosis bears a direct relation to the clinical course. Thus, in Case 1 the cell count was always normal. In Case 2 the count becomes normal as the fever falls and the swelling subsides, while in Case 3 the leukocytosis persists throughout, being highest on the day preceding death. At no time was phagocytosis observed.

Table 3 gives the result of the smears and cultures taken from the lesions. *B. anthracis* was obtained in pure culture on the first day in all three cases. After the first day, Case 1 also showed short chain nonhemolytic streptococci and staphylococci; Case 2 showed pneumococci, and Case 3 *Micrococcus catarrhalis* and staphylococci. The smears from the lesion showed gram-positive bacilli with square ends about 6 by 1.5 microns, occurring in pairs. The smears from the cultures showed nonmotile bacilli which were gram-positive, some having rounded ends and others square, containing spores in the center and occurring in long chains. The cultures were made on human blood agar plates, and under low power the colonies appeared as dense, irregularly rounded masses from which spread parallel, wavy strands, which under high power were seen to consist of chains of bacilli, each bacillus containing an oval, glistening body in the center.

Culture of the urine was negative in all three cases. The feces were negative in Cases 1 and 2 and positive on the day preceding death in Case 3.

Cultures were made of the bristles of the shaving brushes used by all three patients, and only that of Case 1 was found positive. This, however, as stated before, was of little significance, as the brush had been used after the appearance of the lesion.

ANIMAL INOCULATION

An emulsion made from the growth obtained by blood culture in Case 2 was injected into a guinea-pig. The animal died in thirty-two hours, and *B. anthracis*

TABLE 3.—SMEARS AND CULTURES FROM LESIONS

	Date	Smear	Culture
Case 1:			
	9/10/18	B. anthracis	B. anthracis in pure culture
	9/13/18	B. anthracis; nonhemolytic streptococci	B. anthracis; nonhemolytic short chain streptococci
	9/14/18	Nonhemolytic short chain streptococci and staphylococci	Nonhemolytic short chain streptococci and staphylococci
	9/14/18	Nonhemolytic short chain streptococci and staphylococci	Nonhemolytic short chain streptococci and staphylococci
	9/16/18	Nonhemolytic short chain streptococci and staphylococci	Nonhemolytic short chain streptococci and staphylococci
	9/21/18	Nonhemolytic short chain streptococci and staphylococci	Nonhemolytic short chain streptococci and staphylococci
	9/22/18	Nonhemolytic short chain streptococci and staphylococci	Nonhemolytic short chain streptococci and staphylococci
Case 2:			
	9/11/18	B. anthracis	B. anthracis
	9/12/18	B. anthracis; pneumococci	B. anthracis; pneumococci
	9/12/18	B. anthracis; pneumococci	B. anthracis; pneumococci
	9/13/18	B. anthracis; pneumococci	B. anthracis; pneumococci
	9/14/18	B. anthracis; pneumococci	B. anthracis; pneumococci
	9/16/18	B. anthracis; pneumococci	B. anthracis; pneumococci
	9/18/18	B. anthracis; pneumococci	B. anthracis; pneumococci
	9/21/18	B. anthracis; pneumococci	B. anthracis; pneumococci
	9/22/18	B. anthracis; pneumococci	B. anthracis; pneumococci
Case 3:			
	9/19/18	B. anthracis	B. anthracis
	9/20/18	B. anthracis, Micrococcus catarrhalis and staphylococci	B. anthracis, Micrococcus catarrhalis and staphylococci
	9/21/18	B. anthracis, Micrococcus catarrhalis and staphylococci	B. anthracis, Micrococcus catarrhalis and staphylococci
	9/22/18	B. anthracis, Micrococcus catarrhalis and staphylococci	B. anthracis, Micrococcus catarrhalis and staphylococci

was obtained in pure culture from the heart's blood and spleen, and also recovered from the peritoneal exudate. Cultures were also made from the lesion in each case and injected into guinea-pigs. The animal in Case 1 died in thirty-two hours, in Case 2 in twenty hours, and in Case 3, forty-six hours. In each animal, pure growth of *B. anthracis* was obtained from the heart's blood and spleen and, in combination with various pyogenic organisms, from the peritoneal exudate.

In view of the distinctive appearance of the anthrax colonies, which makes them easily obtainable in pure culture, and of the high susceptibility of the guinea-pig, toward this organism, which can be recovered from the guinea-pig in pure culture, the confirmation of the diagnosis of anthrax should be easy. Ludy and Rice[1] report a case of anthrax in which they experienced great difficulty in confirming the diagnosis by animal inoculation.

It will be observed that in our three cases, anthracemia was demonstrated in two. Graham and Detweiler[2] report the recovery of a patient in whose blood they found the anthrax bacillus. The rarity in literature of demonstrated anthracemia may be due to a lack of bacteriologic investigation.

1. Ludy, J. B., and Rice, E. C.: Anthrax at Camp Hancock, Ga., J. A. M. A. **71**: 1133 (Oct. 5) 1918.
2. Graham, R. R., and Detweiler, H. K.: Anthrax, J. A. M. A. **70**: 671 (March 9) 1918.

HEMOLYTIC STREPTOCOCCI

A SEROLOGIC STUDY OF STRAINS ISOLATED DURING A RECENT EPIDEMIC AT CAMP WADSWORTH, S. C.: PRELIMINARY REPORT

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The experiments embodied in this report deal with cultural and serologic studies of hemolytic streptococci isolated in the recent epidemic of respiratory diseases at Camp Wadsworth, S. C. These cultures were obtained from (1) healthy carriers, (2) patients with acute bronchitis and (3) patients with bronchopneumonia, both from the sputum during the course of the disease and from the lungs and heart's blood at necropsy.

A study of the healthy carriers of hemolytic streptococci has been interesting. From June, 1918, to Oct. 1, 1918, when the number of cases of respiratory infections reached epidemic proportions, 21,000 throat cultures were taken from the various units in camp. Chart 1 shows the percentage of healthy carriers found. It will be seen that the curve shows a rather steady rise till the latter part of September, when it rose above 20 to 25 per cent., following which the number of cases of respiratory diseases assumed epidemic proportions. Following this outbreak the number of carriers suddenly dropped to the level obtaining during the summer months.

The hemolytic streptococci are known to be secondary invaders of no mean importance in measles[1] and other acute infections, and it would seem from a study of the recent epidemic of influenza that its importance in causing pneumonia is not to be disregarded.

Previous studies of hemolytic streptococci have resulted in a rather chaotic condition of our knowledge of the different strains of this organism. Park and Williams[2] have classified the hemolytic streptococci in different groups according to their sugar reactions.

It will be shown later in this report that the cultural characteristics have but little bearing on their serologic grouping.

Kinsella and Swift,[3] from a study of a limited number of strains, came to the conclusion that, so far as complement fixation was concerned, all strains were identical.

The purpose of the present study is to show that the hemolytic streptococci can be grouped, according to their agglutination reactions, into certain more or less definite types, and that furthermore, a protective serum for each group is possible of production.

Heretofore little attention has been paid to the different types of streptococci in the production of antistreptococcic serum. It has been the custom to use as many strains of streptococci as possible, with the production of a polyvalent serum. This serum, how-

1. MacCallum, W. G.: Pathology of the Epidemic Streptococcal Bronchopneumonia in the Army Camps, J. A. M. A. **71**: 704 (Aug. 31) 1918. Cumming, J. G.; Spruit, C. B., and Lynch, Charles: The Pneumonias: Streptococcus and Pneumococcus Groups, J. A. M. A. **70**: 1066 (April 13) 1918.
2. Park, W. H., and Williams, Anna W.: Pathogenic Micro-Organisms, Ed. 6, Philadelphia, Lea & Febiger, 1917, p. 254.
3. Kinsella, R. A., and Swift, H. F.: J. Exper. Med. **28**: 169 (Aug.) 1918.

ever, has not been potent, since it has not coincided with the strains causing the infection.

In this study the cultural and serologic characteristics of 110 cultures of hemolytic streptococci from different sources have been studied. The sources from which these strains have been obtained are shown in Table 1. In addition thirty-six cultures from new

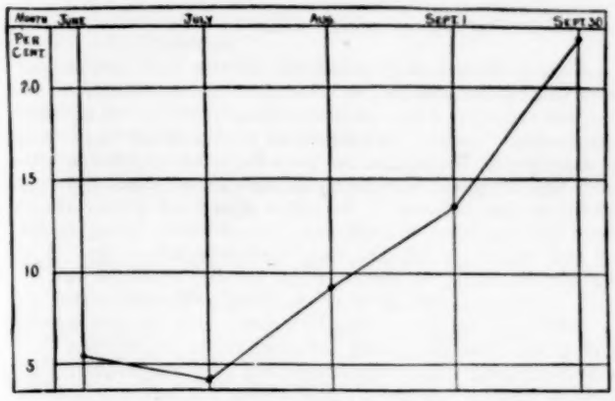

Chart 1.—Percentage of healthy carriers of hemolytic streptococci, Camp Wadsworth, S. C., from June to September, 1918.

arrivals in camp were studied to ascertain whether we were dealing with only a limited number of strains in our study; as will be shown later, these strains corresponded both culturally and serologically with those isolated from camp inhabitants.

TABLE 1.—SOURCES OF STRAINS

	Number Examined	Number Strains Isolated
Healthy carriers	4,743	48
Acute bronchitis	3,817	33
Bronchopneumonia (sputum)	113	11
Bronchopneumonia (necropsies)	45	18
Total		110

CULTURAL CHARACTERISTICS

Many of the strains differ in the appearance of the colonies on blood agar. The size of the colonies and the degree of hemolysis varies with different strains. All strains grow poorly in plain broth, but grow fairly well in glucose broth to which 10 per cent. blood has been added. The character of the growth is usually a uniform clouding with a slight tendency in some strains to flocculate and sediment.

The sugar reactions are indicated in Table 2. It will be seen that the majority of the strains are identical as far as their ability to split sugars is concerned.

TABLE 2.—SUGAR REACTIONS OF HEMOLYTIC STREPTOCOCCI

	Lactose		Mannite		Salicin		Inulin		Total
	+	−	+	−	+	−	+	−	
No. of strains	110	0	0	110	84	26	0	110	110

SEROLOGIC EXPERIMENTS

While the grouping of these strains of hemolytic streptococci by means of their agglutination reactions is not yet complete, the indications are that there are at least four groups that are fairly distinct. Chart 2 shows graphically the relation between the different groups. It will be seen that 48 per cent. of these 110 strains are agglutinated in high dilution (1:5,000) by the serum used, and that there are three other groups, depending on their degree of agglutinability with this serum.

It has been found fairly easy to produce in rabbits a high titer serum. Live avirulent cultures were used for immunization. Nine intravenous injections were found to be sufficient to produce an immune serum which agglutinated homologous strains in dilutions of 1:10,000.

Glucose broth with 1 per cent. blood was used for growing the cultures for agglutination tests. In this medium an abundant growth is obtained in from sixteen to twenty-four hours. Very few of the cultures failed to grow with a uniform turbidity suitable for agglutination purposes.

BACTERICIDAL TESTS

Having found that this serum was high in agglutinins, it was interesting to determine its bactericidal properties. It was found that the bacteriolysins were specific for each group in the same way as the agglutinins are specific. Strains that were identical by agglutination tests were killed, while the immune serum failed to have bactericidal properties outside

TABLE 3.—BACTERICIDAL EXPERIMENTS

No. of Culture	No. of Colonies: Serum plus Complement	No. of Colonies: Salt Solution plus Complement	Agglutination
159	0	800	1:5,000
161	0	200	1:5,000
170	0	200	1:5,000
164	0	200	1:5,000
163	0	600	1:5,000
169	50	1,000	1:5,000
186	10	200	1:5,000
172	100	2,000	1:5,000
168	24	28	1:40
187	500	500	1:20
184	500	500	1:60
188	200	200	1:20
181	200	200	1:40
178	200	100	1:20

of its own group. Table 3 gives the results of bactericidal tests. In all of the experiments, 0.5 c.c. of a 1:10 dilution of immune serum and 0.5 c.c. of a 1:10 dilution of fresh guinea-pig complement were mixed with 0.5 c.c. of a twelve hour blood glucose broth culture of the streptococcus strain. Control tubes contained

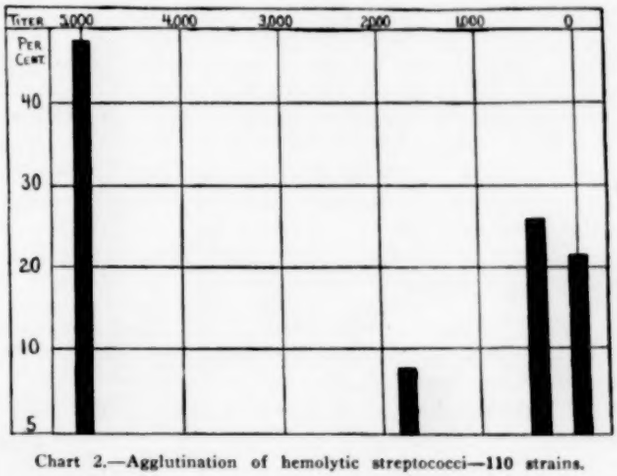

Chart 2.—Agglutination of hemolytic streptococci—110 strains.

0.5 c.c. culture, 0.5 c.c. complement and 0.5 c.c. salt solution. The tubes were then incubated four hours. A loopful from each tube was then plated and the number of colonies counted after twenty-four hours' incubation.

These experiments show that the serum is potent only for the homologous strains, and has no more effect than normal serum against strains of other groups.

PROTECTION EXPERIMENTS

The foregoing experiments give evidence of the immune properties of the serum in vitro. The question next arose as to whether the serum was of value in protecting animals against infection with hemolytic streptococci. Mice were used in these experiments. Strains 159, 192 and 197, which had been found to fall within the group which was agglutinated in high dilution, were used. These strains were passed through mice until their virulence was such that 0.5 c.c. of a four hour blood broth culture killed within twenty-four hours. The protocols give the results of these protective experiments. It is necessary to use a sufficient amount of serum to neutralize the bacteria, which may account for its failure to protect Mice 2 and 4. Furthermore, Culture 159 was a highly virulent strain; 0.1 c.c. of a four hour blood glucose broth culture often killed a mouse in twelve hours.

PROTOCOLS

Mouse 1.—Control. At 2 p. m., 0.25 c.c. of a four hour blood glucose broth culture of Strain 159. Inactive and sick at 6 p. m. Died during the night in less than eighteen hours.

Mouse 2.—At 2 p. m., 0.25 c.c. of a four hour blood glucose broth culture of Strain 159 and 0.25 c.c. serum. Normal at 8 p. m. Dead at 8 a. m.

Mouse 3.—Control. At 8 a. m., 0.1 c.c. of a six hour blood glucose broth culture of Strain 159. Sick at 12 m. Dead at 9 p. m.

Mouse 4.—At 8 a. m., 0.1 c.c. of a six hour blood glucose broth culture of Strain 159 and 0.5 c.c. serum. Normal at 4 p. m. Dead in twenty-four hours.

Mouse 5.—Control. At 2 p. m., 0.5 c.c. of Culture 197. Dead in thirty-six hours. Peritoneal exudate showed many streptococci, very few leukocytes.

Mouse 6.—At 2 p. m., 0.5 c.c. of Culture 197 and 0.5 c.c. serum. Normal in thirty-six hours. Dead in seventy-two hours. Peritoneal exudate showed active phagocytosis of streptococci.

Mouse 7.—At 2 p. m., 1.0 c.c. serum. At 3 p. m., 0.5 c.c. Culture 197. Normal seventy-two hours later.

Mouse 8.—Control. At 9 p. m., 0.5 c.c. Culture 192. Dead fourteen hours later.

Mouse 9.—At 9 p. m., 0.5 c.c. Culture 192 and 0.5 c.c. serum. Normal seventy-two hours later.

Mouse 10.—Control. At 3 p. m., 0.5 c.c. Culture 197. Dead sixteen hours later.

Mouse 11.—At 3 p. m., 0.5 c.c. Culture 197 and 0.5 c.c. serum. Normal twenty-four hours later.

Mouse 12.—At 3 p. m., 1 c.c. serum. At 4 p. m., 0.5 c.c. Culture 197. Normal twenty-four hours later

From these experiments it seems that an antistreptococcic serum may be produced in rabbits quite easily. Furthermore, this serum is high in agglutinins, bacteriolysins and other protective properties, provided the serologic differences between strains is observed.

SUMMARY

1. Hemolytic streptococci can be grouped into a few rather definite types.

2. These groups are obtained by the serologic reactions of the different strains, since their cultural characteristics bear no relation to their immunologic grouping.

3. The serums of rabbits immunized with a strain of hemolytic streptococcus protect mice against infection with a homologous strain, but not against strains which are serologically different.

4. Certain "master strains" can be isolated by their serologic reactions, and it seems possible that these strains may be used in the production of a therapeutic serum for use in infection with hemolytic streptococci.

Clinical Notes, Suggestions, and New Instruments

SELECTIVE ELIMINATION OF HAY BACILLUS FROM CULTURES OF OBLIGATIVE ANAEROBES

Ivan C. Hall, M.S., Berkeley, Calif.
Associate Professor of Bacteriology, University of California Medical School

Repeated plating and streaking out on agar plates are universally acknowledged to be fairly reliable procedures for the isolation of aerobic bacteria irrespective of the possible concurrence of obligative anaerobes, for the latter, if present, are completely eliminated by the conditions of aerobic culture. But the same procedures applied under anaerobic conditions for the isolation of obligative anaerobes from cultures mixed with aerobes involve much uncertainty owing to the fact that many aerobes are also facultative anaerobes. It is therefore necessary to eliminate all aerobes from the culture before attempting the purification of obligative anaerobes by any method of surface colony isolation. It is an easy matter to eliminate nonsporulating contaminations by heating cultures containing sporulating anaerobes to a temperature sufficient to destroy vegetative forms alone; but selective heating is a total failure for the elimination of hay bacilli, since most of these organisms are less susceptible to heat than the spores of anaerobes. In view of the relative infrequency with which anaerobes are encountered naturally free from aerobes, and the possibility of aerobic contamination of pure cultures of anaerobes in the laboratory, the method of eliminating aerobic spores here described may be of interest.

The method consists in repeated transfer with incubation of cultures in glucose broth with 1:100,000 or less of gentian violet. The broth is contained in our constricted tube with marble seal;[1] this, while most convenient, is not considered indispensable in the method.

The tubes of dye medium are heated in a cup of boiling water for a few moments, to drive out dissolved oxygen, and are cooled just previous to inoculation. Growth of anaerobes is likely to be delayed and restricted in the presence of gentian violet as compared with nondye medium. Transfer should be made by loop or pipet, as soon as definite turbidity appears, to an aerobic agar slant, gentian violet glucose broth (boiled and cooled), and deep sterile brain (boiled and cooled). The first is a test for the presence of aerobes, the second provides for continuation of the process if so far unsuccessful, and the third secures a viable culture in the case of successful elimination of aerobic spores. Usually not more than three transfers in gentian violet glucose broth are necessary to eliminate hay bacilli from the culture. Confirmation of freedom from aerobic organisms should be made also in the case of the brain culture by attempted culture on an aerobic agar slant. Similar results may be secured with crystal violet.

Cultures so freed from aerobic forms may yet comprise two or more species of anaerobes so that purity of anaerobic cultures cannot be postulated, as is so often done, on failure to secure aerobic growth therefrom.

It may seem paradoxical that we should advocate the use of these dyes in this manner after having only recently shown the value of gentian violet in the elimination of spurious presumptive tests for *B. coli* in water[2] and milk[3] due to anaerobes. The procedure is based, however, on the fact that while most anaerobic spore-bearing bacilli are gram-positive and follow Churchman's[4] rule in being inhibited by

1. Hall, I. C.: A New Aerobic-Anaerobic Culture Tube, Univ. of Calif. Pub. in Pathology **2**: 147, 1915.
2. Hall and Ellefson: The Elimination of Spurious Presumptive Tests for B. Coli in Water by the Use of Gentian Violet, J. Bacteriol. **3**: 329, 1918.
3. Hall and Ellefson: A Brief Note on the Use of Gentian Violet in Presumptive Tests for B. Coli in Milk with Reference to Sporulating Anaerobes, J. Bacteriol. **3**: 355, 1918.
4. Churchman: The Selective Bactericidal Action of Gentian Violet, J. Exper. Med. **16**: 221, 1912.

triamino-triphenyl-methane dyes, they are apparently considerably less susceptible to the action of such dyes than aerobic sporulating bacilli. The same reagent can therefore be made to operate in a different sense with respect to the selective cultivation of anaerobic bacilli, according to the concentration of the dye used.

The principle has been used many times with various mixtures of anaerobes and hay bacilli without, as yet, a single failure. Even *B. putrificus*, which of all anaerobic bacteria cultivated by us is slowest growing and most delicate, has been freed from accidental hay bacillus contamination in two transfers by this method.

Our recent work with gentian violet and crystal violet has been done with a stock of Grübler's dyes secured before 1914. I hope that whatever is significant in this work can soon be repeated and corroborated by means of American made dyes so that when prewar stocks are exhausted there will be no temptation to renew our patronage of German dyestuffs.

A NEW METHOD FOR FIXATION OF PARAFFIN SECTIONS

JAMES HEBERT MITCHELL, M.D., CHICAGO

A new method for the fixation of paraffin sections to slides, doing away with the troublesome albumin fixative, has been devised by Land[1] which depends on the well known principle that most colloidal substances when treated with a solution of a salt of chromium, exposed to light and dried, become insoluble in water. In his paper Land described his technic as follows:

A 1 per cent. solution of acacia that has been made slightly yellow by the addition of a few drops of 0.2 per cent. potassium bichromate is allowed to flow over a thoroughly clean slide. The paraffin ribbon is then placed on this slide and exposed to light until dry.

In working with this method I found that the paraffin sections were invariably fixed to the slide after a few hours' exposure to light. The fixative used in this manner, however, had the disadvantage of taking up too much stain, particularly with polychrome methylene blue, which is used frequently in dermatologic work. Later I adopted the practice of moistening a cotton swab with the acacia and bichromate solutions, pressing out as much of the solution as possible from the swab, and then rubbing it very lightly over the slide so that the mixture dried immediately and could scarcely be detected with the eye.

I have found that through this use of a mere trace of the fixative, the sections adhere equally well as when the slides are flooded; moreover, there is no taking up of stain by the fixative.

25 East Washington Street.

A Unique Eye Case.—This case, though suggesting that foreign bodies may be a cause of dacryocystitis, is of interest chiefly because of its rarity. The patient complained of soreness and irritation in his right eye awakening him early in the morning. His wife clipped off what she assumed to be an inverted eyelash, scratching the eyeball. As he was not relieved he came to the dispensary on the way to his office. Several medical officers who examined him observed hyperemia of the ocular conjunctiva limited to the sector near the inner canthus, but did not discover the cause. The patient received an eye wash and was instructed to return if the symptoms did not subside. Several hours later when he came back, a black speck was discovered in the orifice of the inferior canaliculus, which when magnified by a lens, appeared to be the stump of a misplaced or displaced eyelash. With the aid of the magnifying glass it was grasped with forceps and drawn out of the canaliculus without any resistance. It was a fragment of an eyelash, three-eighths inch long. Relief was immediate.—G. W. HAIGH, M.D., Lieutenant, M. C., U. S. N. R. F., Navy Yard, Boston.

1. Land, W. J. C.: Botan. Gaz., May, 1915.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

DIGITAN.—First introduced as digipuratum.—A digitalis preparation said to contain digitoxin and digitalin in the form of tannates. It is standardized biologically by the method of Gottlieb. It is claimed that in digitan 85 per cent. of the inactive substances found in the ordinary extract have been removed and that it is free from digitoxin.

Actions and Uses.—The same as those of digitalis.

Dosage.—The same as that of digitalis.

Manufactured by Merck & Co., New York, under U. S. patent No. 943,578 (Dec. 14, 1909; expires 1926) by license of the U. S. Federal Trade Commission.

Digitan Tablets, 1½ grains.—Each tablet contains digitan 0.1 Gm. (1½ grains).

Digitan is obtained by removing objectionable constituents from an alcoholic extract of digitalis, neutralized with alkaline hydroxides, by the addition of ether, petroleum benzene, or other suitable precipitant, and reducing the purified liquid to a powder, by evaporating with milk-sugar.

Digitan is a greenish-yellow, odorless powder of bitter taste. The active constituents of digitan are insoluble in cold water and diluted acids, but are easily soluble in weak alkalis.

Digitan responds to the following identity test: If 0.1 Gm. digitan is underlaid with about 3 Cc. of glacial acetic acid which contains 1 per cent. of a 5 per cent. solution of ferric sulphate, there appears a red band (presence of digitalin) and above this another, at first bright green, later changing to dark green and finally blue (presence of digitoxin). To determine the digitoxin content, 10 Gm. of digitan are dissolved with moderate heat in 50 Cc. of water; 5 Cc. or 10 per cent. ammonia water are added and the liquid is then extracted with chloroform. The chloroformic extractions are filtered into a tared vessel and the chloroform removed by distillation. The residue is dissolved in 3 Gm. of chloroform and mixed with 7 Gm. of ether and 50 Gm. of petroleum ether. The separated flakes are collected on a small filter. Then the residue on the filter is dissolved in absolute alcohol, allowing the solution to run into the tared distilling vessel. The alcohol is then distilled off and the residue dried to constant weight. The digitoxin thus found should not amount to more than 0.04 Gm. The physiologic activity is determined by the method of Gottlieb: 1 Gm. of digitan is treated with 19 Cc. of hot water and 1 Cc. of a 2 per cent. solution of sodium bicarbonate. If now 0.15 Cc., 0.2 Cc., and 0.25 Cc., respectively, of this solution is injected into the femoral lymphatics of freshly caught land frogs (*Rana temporaria*), weighing 30 Gm. each, the exposed heart of the animals should permanently be brought to a stop in the majority of instances (say in five out of six experiments) within half an hour after the administration of a 0.2 Cc. dose. If 0.2 Cc. of the 5 per cent. solution (containing 0.01 Gm. of digitan) is sufficient to stop the systolic heart-beat within half an hour, then 1 Gm. of digitan will contain 100 units; should 0.25 Cc. of the 5 per cent. solution be necessary, the number of units of digitan it contains would be 80; if 0.25 Cc. should not yet prove sufficient, the preparation would be too weak to be effective; and should the systole be arrested after a dose of 0.15 Cc. within half an hour after injection, the preparation would be too strong. The total physiologic activity having been determined, the relative amount that is due to digitoxin can be determined by using the digitoxin separated in the foregoing quantitative determination and by the difference between this amount and the total physiologic activity the amount due to the digitalin alone can be estimated.

NEOARSPHENAMINE (See New and Nonofficial Remedies, 1918, p. 47).

Neoarsenobenzol (Dermatological Research Laboratories).—A brand of neoarsphenamine.

Manufactured by the Dermatological Research Laboratories, Philadelphia Polyclinic, Philadelphia, Pa., under U. S. patent reissue No. 13,848 (Dec. 15, 1914; expires 1931) by license of the U. S. Federal Trade Commission.

Neoarsenobenzol (Dermatological Research Laboratories) 0.1 Gm. Ampules.—Each hermetically sealed ampule contains neoarsenobenzol (Dermatological Research Laboratories) 0.1 Gm.

Neoarsenobenzol (Dermatological Research Laboratories) 0.3 Gm. Ampules.—Each hermetically sealed ampule contains neoarsenobenzol (Dermatological Research Laboratories) 0.3 Gm.

Neoarsenobenzol (Dermatological Research Laboratories) 0.45 Gm. Ampules.—Each hermetically sealed ampule contains neoarsenobenzol (Dermatological Research Laboratories) 0.45 Gm.

Neoarsenobenzol (Dermatological Research Laboratories) 0.6 Gm. Ampules.—Each hermetically sealed ampule contains neoarsenobenzol (Dermatological Research Laboratories) 0.6 Gm.

Neoarsenobenzol (Dermatological Research Laboratories) 0.75 Gm. Ampules.—Each hermetically sealed ampule contains neoarsenobenzol (Dermatological Research Laboratories) 0.75 Gm.

Neoarsenobenzol (Dermatological Research Laboratories) 0.9 Gm. Ampules.—Each hermetically sealed ampule contains neoarsenobenzol (Dermatological Research Laboratories) 0.9 Gm.

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SATURDAY, JANUARY 25, 1919

THE SUPPLY OF PRACTICAL NURSES

What's the matter with the trained nurse? A wave of harsh and resentful criticism of the professional nurse seems to be sweeping over the country. In spite of a recognition of her splendid achievement in remaking hospital nursing, and of setting up high standards for private nursing; in spite of her magnificent and sacrificial service in the great war, she is not now viewed by large numbers of physicians and laymen as a ministering angel of mercy or as an unmixed blessing. And when rebuked for these harsh expressions of disapproval, her unfeeling critics forcefully reply: "She is getting just what she deserves." What does it mean?

Is it because through high standards of admission to her schools, and long years of training before she is graduated, she has chosen to make herself one of a small body of the elect, a superior being? Is it because with the high cost of living and the scarcity of these chosen few she has, labor-union-like, demanded higher pay which only the well-to-do can give? Is it because in the home she is autocratic and unwilling to serve except in accordance with rules that she herself lays down, often demanding that service be rendered her and causing discord in the household management at a time of crisis? Is it because in many hospitals she has gradually acquired more influence and power until through her officials she speaks with authority even to the management, and dictatorially demands that before the interests of the medical staff are considered—sometimes even before the interests of the patients—there must be considered those of the nurses? Perhaps there is a little truth in each one of these reasons. Perhaps in this resentful criticism, narrow as it may be, the nurses are reaping what they have sown.

The war and the epidemic of influenza, with the consequent scarcity of nurses, have acutely drawn attention to the trained nurse and to the fact that she does not supply the suitable agent for ministering to the large body of the ill. The very poor may get free nursing in the hospitals or, if lucky, at their homes through charity; the rich can and will pay whatever may be demanded; but the large mass of people of moderate means, too self-respecting to accept charity, not able to pay the high price of the expert nurse, must be deprived of her services or secure them at what to these people is often a ruinous sacrifice. More than this: a nurse of the highly trained type is not necessary or even desirable in the vast majority of cases of illness.

What are the requirements of a capable, skilled nurse, a physician's assistant? First a right personality; without this she is hopeless. Then intelligence, by which we mean a readiness of comprehension and understanding. Further, she should be of fair education, able to make herself understood, to write, to read, to reason. Lastly, she should have had training of sufficient length, probably one year, in a good hospital. This training should teach her the proper bed care of the ill, the preparation of food, the management of the patient—not his illness—and the methods of administering drugs and other remedial agents. She should learn enough of anatomy so that she will not, with her hypodermic syringe, enter the brachial artery; she should know enough of symptomatology to sense the possible significance of blood in the stool or of abdominal pain in typhoid; she should know enough pathology so that she will not wilfully violate the physician's orders against massaging a thrombosed femoral vein; she should have enough theoretical and practical training in bacteriology so that aseptic methods are to her, through her grasp of the reasons underlying them, methods to be scrupulously followed.

It goes without saying that other things—personality, native intelligence, etc.—being equal, the college or high school graduate will grasp these facts more readily and will, to this extent, be the more competent nurse. But such superknowledge is not necessary. For 90 per cent. of cases of illness, a skilled nurse with the characteristics just enumerated and with one year's training will answer fully as well and will fit into the average household better. She will be a true physician's assistant and will be a household helper not too proud to assist in the kitchen or even to help care for the baby. If this is true, why should not this capable woman of ordinary but sufficient ability and training be allowed to practice her profession licensed by the state and earning an honorable livelihood?

There is a place for the highly trained nurse, the registered nurse of today. From their ranks will come the superintendents of the training schools of various grades, the head nurses in our hospitals, the nurses in our operating rooms, nurses for cases of special severity or complication, and the teachers of nurses. Let the training schools preserve their high ideals, though there may be question as to the necessity or wisdom of requiring even a high school degree for admission or a three years' course of training

except in special cases or for postgraduate work. For her own good let the nurse be a little less autocratic, a little less dictatorial, a little more human. *Non ministrari sed ministrare* is as good a motto for a training school as for a woman's college. The trained nurse from having been a luxury has become a public necessity, like the telephone and railroad. Should not methods less like those of selfish private ownership give way to those wherein service to the sick public is the paramount aim?

MEDICINE IN THE NEW WORLD OF PEACE

We have frequently emphasized the fact that medicine and those who practice it can never be the same after the war as before. We fully recognize that we are in the presence of a great social upheaval whose effect throughout the world will probably surpass even that momentous event known as the French Revolution. We can see only dimly whither we are tending, but it is at least evident that civilization is moving rapidly, whether down a steep place into the sea or, as some believe, up into the heights of the Promised Land. In this movement the medical profession is to a degree caught in the sweep of forces beyond its control, but it is also to a large extent potent and responsible for the part it shall play in the new era dawning on us. Many individual physicians have been more or less completely, if temporarily, uprooted by mobilization for war, and the whole medical profession, like many other professions, has been jostled out of its stability and routine. It is a time to many for strenuous readjustment; it is also an unequaled opportunity for surveying the future of medicine and formulating plans for a rational development. One thing is certain: that no limited considerations of self interest are going to satisfy either the bulk of medical practitioners or the public they serve. The practice of medicine will more than ever be regarded not merely as a means of earning a livelihood but as an essential service to mankind.

It would not be desirable to consider here all the possibilities of change, even could we envisage these possibilities. But there is at least one aspect of medicine that the future is very certain to bring still more into the foreground: This is the side of medicine that is concerned with the prevention of disease, the preservation of the public health. Like many truths that have become wearisome through reiteration, the doctrine that from the standpoint of the community the prevention of disease is more important than its cure has come to sound dully on our ears. It has been said so often that many of us feel that we have done something about it. And yet every student of public health knows that hardly a beginning has been made in the application of our existing knowledge to the solution of public health problems. Available information is not utilized; suitable procedures are not carried out at all or are carried out wastefully and inefficiently; the opinion of the amateur or of the facile newspaper hygienist has as much weight with the public as the opinion of the expert.

These are all familiar conditions, but the medical profession has thus far failed to consider the situation seriously enough. The creation and proper maintenance of a national department of health would undoubtedly help toward the more general recognition of the importance of preventive medicine, but at best this would be only a preliminary. The real reform must be based on the training of a sufficiently large number of men in the principles of public health so that a body of educated, expert opinion in the medical profession will appreciate what can be done and what ought to be done, and will stand solidly back of attempts to introduce public health measures and to strengthen public health organization. Thus far, as everybody knows, little has been done to expand the work in preventive medicine in many of our leading medical schools to a degree at all commensurate with its importance in the future of American medicine.

The situation is simply this: Civilized peoples are spending vast sums in the work of palliating and remedying the results of disease, and relatively little in preventing disease. Reconstruction of ravaged territory is sometimes necessary; but a world with eyes fixed on a peace congress does not need to be told that our main concern is to choke off the agencies of devastation before they become operative. The responsibility of laying much more stress than heretofore on the prevention of disease rests primarily on the medical profession. There are at least two ways in which the conspicuousness into which the war has thrown this side of medicine can be immediately utilized in furthering the interests of public health: One is the support of public health authorities by individual physicians. The other is the frank, efficient and immediate recognition of the importance of preventive medicine in the curriculums of our medical schools.

THE METABOLISM OF NONSPECIFIC INFLAMMATORY PROCESSES

The entrance of various micro-organisms into the body, particularly when their invasion is localized in such ways as to give rise to septic inflammations, is attended by well recognized, pronounced reactions. These are varied and may include fever, loss of weight and leukocytosis, along with marked disturbances in nitrogenous metabolism. Ordinarily it is assumed that this untoward response is due to the toxins or other ill defined and undefined products of the invading bacteria—a specific reaction. Thus in such types of septic inflammation as septicemia, peritonitis and pneumonia there is in addition to more

familiar clinical manifestations a definite rise in the nonprotein and urea nitrogen of the blood.[1] Some cases show a great rise above normal (more than 100 mg. of nonprotein nitrogen per hundred c.c. of blood), without evidence of kidney lesions sufficiently severe to indicate retention of metabolites as the cause of the high figures cited.

Whipple[2] and his associates of the Hooper Foundation for Medical Research at the University of California have submitted evidence to show that suppurative processes or acute inflammation due to a chemical irritant can bring about the same changes as those represented by the inflammatory reaction caused by some specific bacterial agent, when the latter is limited to the initial location. Evidently nonspecific intoxication must account for the sterile reactions produced. Whipple has accordingly formulated the hypothesis that the injury done by means of a sterile abscess may be made up mainly of two factors: (1) a local injury of tissue by the chemical irritant, and (2) general injury of body protein by means of toxic split products absorbed from the site of local injury. That is, the locally injured cell protoplasm undergoes prompt autolysis with escape of toxic protein cleavage products. Since septic inflammations show an almost identical acute reaction and injury of body protein, the deduction is obvious that "a great part, at least, of the reaction in septic inflammation is truly nonspecific and results from the primary injury of the host's protein and cell autolysis."

This view is by no means an orthodox one. It is in good part based on Whipple's finding that in the intoxication following intestinal obstruction there is a very marked increment in the nonprotein nitrogen of the blood. Whipple claims to have isolated a "toxic proteose," injection of which causes a profound disturbance of tissue equilibrium as indicated by the altered nitrogenous metabolism. With Van Slyke[3] he has observed that these changes are identical with those following the feeding of large amounts of protein. These facts, Whipple and Van Slyke remark, indicate that the proteose intoxication causes an abnormally rapid autodigestion of tissue proteins, but that the nitrogenous end-products are, in chief part at least, the same that result from normal catabolism of food proteins. There is no evidence, they add, that the autolytic products play any part in causing the intoxication. The possibility of such a part and a resultant vicious circle is not excluded, but from the available facts the autolysis appears more as a result than a cause of the intoxication. It seems possible, to Whipple and Van Slyke, that in disease or intoxication, tissue catabolism may be enormously accelerated and yet yield the end-products of normal protein breakdown.

We may agree that the interesting results following injection of a sterile substance represent a good example of accelerated protein catabolism and tissue autolysis caused by the action of a toxin, uncomplicated by the presence of parasites, by abnormally high temperature, or by any other apparent factors save the toxin itself. The analogy—to describe the facts in a purely objective way—between the manifestations of septic inflammations and nonbacterial reactions unquestionably emphasizes most prominently the nonspecific nature of the responses in many supposedly specific infections or processes. But we may be justified in hesitating to identify the materies morbi in all these cases with an ill defined proteose until the physiologic chemistry of this aspect of the subject is pursued somewhat farther.

1. Schwartz, Harold, and McGill, Caroline: Blood Urea Determinations in Two Hundred and Eleven Cases, Arch. Int. Med. **11**: 42 (Jan.) 1916. Cooke, J. V., and Whipple, G. H.: Proteose Intoxications and Injury of Body Protein, V, The Increase in Nonprotein Nitrogen of the Blood in Acute Inflammatory Processes and Acute Intoxications, J. Exper. Med. **28**: 243, 1918.

2. Cooke, J. V., and Whipple, G. H.: Proteose Intoxications and Injury of Body Protein, IV, The Metabolism of Dogs with Sterile Abscess, Pancreatitis and Pleuritis, J. Exper. Med. **28**: 223, 1918.

3. Whipple, G. H., and Van Slyke, D. D.: Proteose Intoxications and Injury of Body Protein, III, Toxic Protein Catabolism and Its Influence on the Nonprotein Partition of the Blood, J. Exper. Med., **28**: 213, 1918.

CENTENARY OF THE AMERICAN JOURNAL OF SCIENCE

It would be unfortunate indeed if the distractions of the world war and the enormous demands made by it on the energies of men in medicine compelled them to overlook entirely what would have been, in peace times, a significant event. Last July the *American Journal of Science,* familiarly known for many years as *Silliman's Journal,* celebrated its centennial. This is the only scientific periodical in this country to maintain an uninterrupted existence since that early date, and this honor is shared with hardly more than half a dozen other independent scientific periodicals in the world at large. Similar publications of learned societies for the same period are also few in number. The history of the enterprise, together with reviews of the century's progress in the fundamental physical, chemical and biologic sciences, written by eminent men of science, has been published in an anniversary issue.[1]

Amid the wealth of contributions that a hundred years have afforded in the form of papers or reviews on almost every field of scientific endeavor, and even to some extent outside of this precise domain, we feel impelled to mention two items of singular interest to medical readers. One of these pertains to the description of chloroform by Samuel Guthrie of Sackett's Harbor, N. Y. In a letter published in *Silliman's Journal* in 1832,[2] he describes a "cheap and easy process" for preparing "chloric ether" (chloroform), having been impelled thereto by reading of its possible

1. Am. J. Sc. **46** (July) 1918.

2. Guthrie, S.: New Method of Preparing a Spirituous Solution of Chloric Ether, Am. J. Sc. **21**: 60, 405, 1832.

medicinal powers in Silliman's "Elements of Chemistry." Silliman himself records in the same volume of his journal (p. 405) that he was in the habit of preparing "an alcoholic solution of this ether," diluting it with water to the proper degree, and then calling the attention of the medical students to its remarkably grateful properties as a cordial, suggesting at the same time the probability that it might prove a valuable medicine. Dr. Eli Ives, professor in the Medical Institution of Yale College in 1832, reported favorable effects of the administration of "chloric ether" both by mouth and through inhalation. He remarks: "I have been pleased with the operation of this ether; it is diffusible in its action like the other ethers, it possesses the peculiar properties of chlorin, and it has this advantage over the sulphuric or other ethers, that it is always grateful. I have known no child refuse it." In the light of the current prohibition movement it is interesting to read a further comment of the editor, Professor Silliman: "We ought to discountenance any other than a medical use of this singular solution; unless indeed it should be found of utility in some of the arts. He would be no benefactor of his species, who should add a new attraction to intoxicating spirit."

The second item of historical value relates to the earliest analyses of human gastric juice obtained by Dr. William Beaumont from his classic case of gastric fistula. In his entertaining life of Beaumont, Jesse S. Myer has recorded how samples of the secretion were submitted to Professor Silliman at Yale. The latter, desiring the support of a chemist of wider experience in organic analysis, sent a sample to the far-famed Berzelius of Sweden. The reply of the latter, published in *Silliman's Journal*,[3] affords an interesting commentary on the status of physiologic chemistry in the early decades of the nineteenth century. The gastric juice sent in April, 1833, did not arrive at Stockholm until the close of the month of August; yet Berzelius reports that "it had not become at all putrescent." This is in accord with the observation of Spallanzani, who reported many years before that the gastric juice is antiseptic.

The unique character of the hitherto unanalyzed gastric fluid proved a stumbling block even to Berzelius' skill as an analyst. Here is his comment: "I could not make this analysis with any hope of success. I assure you that I commenced, but the difficulties immediately arrested me. On testing the gastric juice with litmus paper, I found it strongly acid. The acids are for the most part volatile. . . . Now it was necessary to make a plan of the analysis—but how could I make a plan, the nature of the substances to be separated being unknown?" Thus it was left to Prout to discover the true nature of the acid secreted by the stomach.

3. Am. J. Sc. **27**: 406, 1835.

Current Comment

THE TREATMENT OF INSANE SOLDIERS

Under the heading of "A Crying Outrage,"[1] the *North American Review's War Weekly* editorially protests against the treatment of soldiers suffering from shell shock, who, the reader is informed, are sent to St. Elizabeth's, the government hospital for the insane. "The mere fact," says the editorial, "that men suffering from shell shock should be confined in an institution where conditions must inevitably aggravate their malady, makes it imperative that the attention of the public be called to such heartless and unscientific treatment." These ideas of insanity are evidently quite as accurate as the writer's knowledge of the plans being followed by the Surgeon-General of the Army in caring for the class of cases referred to. Many of the men committed to the insane asylum, according to the *War Weekly*, "are keenly alive to the danger involved," "they plead pitifully to be sent elsewhere," "they argue with force and lucidity that the character of their affliction is only temporary," they insist that "incarceration in an insane asylum, where they are thrown with the hopelessly insane, must almost inevitably aggravate their troubles, and probably will change what are now temporary aberrations into permanent insanity." This description of nervous diseases is interesting, though hardly authoritative, and impresses no one except the uninformed reader. The medical profession and the American public have consistently and unhesitatingly supported the administration of the Medical Department of the Army. They have as yet had no cause to regret their confidence. While they will hardly regard the editor of the *North American Review* as a competent or qualified critic on medical subjects, it is perhaps not amiss to state the facts regarding the treatment of soldiers suffering from nervous and mental conditions developing in the service. The so-called shell shock cases are not sent to St. Elizabeth's; only general paretic and unimprovable insane epileptics are sent to that institution from the Army; all other insane patients are treated in military hospitals until the possibility of recovery or improvement is eliminated. Special hospitals for mental cases have been established at Fort Porter, N. Y., Danville, N. Y., and East Norfolk, Mass. Special beds for mental patients have been set aside at Bloomingdale Hospital, New York. Special wards for these patients have been created at Walter Reed Hospital, Fort McPherson, Fort Sheridan, Fort Benjamin Harrison, Letterman General Hospital, Fort Sam Houston and Madison Barracks. These special hospitals and wards have been purposely distributed over the country so that patients may be treated as near their homes as possible. They are in charge of psychiatrists and specialists of experience, drawn, for the most part, from the civil hospital services. Patients recovering within four months are discharged

1. "A Crying Outrage," North American Review's Weekly, Jan. 4, 1919, p. 12.

from the service; those showing no improvement at the end of four months' treatment are transferred to St. Elizabeth's in accordance with Army regulations. Before being so transferred, they are discharged from the service, as St. Elizabeth's is a government hospital under the care of the Department of the Interior and is not in charge of the Medical Department of the Army. Shell shock does not mean insanity, and the patients suffering from shell shock alone never see St. Elizabeth's. In caring for the health of our army of more than 4,000,000 soldiers, the Medical Department has established an enviable record. It is not even presumable that such treatment as that described in the editorial referred to occurred, or that it could occur. In any event, how much better would it have been if, instead of making such an attack as this, the *Weekly* had simply asked for the facts before commenting. If any suspicion exists as to the treatment of ill or wounded soldiers or sailors, in any instance, the Surgeon-General of the Army, or Navy, will undoubtedly be very ready to give the facts regarding any such instance, or an opportunity for an investigation.

A LINE OFFICER'S OPINION OF THE ARMY MEDICAL DEPARTMENT

Hon. F. H. La Guardia, member of Congress from New York City, has recently returned to his place in the House of Representatives after serving with the American Expeditionary Forces in France as a major of the line. In a recent debate in Congress, Mr. La Guardia took the opportunity to reply to the criticism that had been made two days before regarding Walter Reed Hospital. The criticism was contained in a letter to a member of Congress regarding the treatment given an officer who had died in the contagious ward of the hospital. On referring the letter to the Surgeon-General, an immediate investigation was directed and one of the leading internists on duty at the Surgeon-General's Office was detailed to make the investigation. The report disclosed that the officer in question was admitted to the hospital on the sixth day of a pneumonia following influenza; at the time of admission, the patient's temperature was 104; pulse, 100; respiration, 32; the patient was cyanotic with definite consolidation, dulness, bronchial breathing and moist râles—in a word, he presented the typical picture of an advanced pneumonia. He died in twenty-four hours. A carefully detailed report submitted to the Surgeon-General revealed that the medical attention given the patient was of the highest character and that there was no evidence of neglect in any way. In asking to have the report to the Surgeon-General introduced into the record, Major La Guardia took occasion to pay a high tribute to the work of the Medical Department abroad. Coming from a distinguished Army officer and a medical layman who has seen the workings of the Medical Department of the Army at first hand under conditions as they exist at the front, Major La Guardia's impressions are of the highest value. He said:

> Mr. Chairman, it has been, and I suppose it will be so often, my unpleasant and painful duty to criticize various departments and bureaus of our government for their conduct of the war, that it is a pleasure on this occasion to testify to the excellent work and the perfect organization of the Surgeon-General's Office overseas. The gentleman from New York (Mr. Haskell) had read the other day a complaint about a case in the Walter Reed Hospital, in Washington. I have no actual information as to this particular hospital or what the Surgeon-General's Office has been doing in this country during the war, so I asked for a report covering that particular case. I will have the clerk read the report, which is a full and complete answer to the complaint read into the record the other day. It is but fair to have it before the members and the country, inasmuch as the other side of the question was presented to the House.
>
> I want to say that our base hospitals overseas were perfect. The work performed by the medical department right near the firing lines was wonderful. The work of our medical corps overseas was a revelation and a lesson to the armies of our allies. It is the one branch that could teach and did not require to learn from others. The sanitary work in our camps kept the disease down to an unprecedented low percentage. The best medical men of the country responded to the call, and fortunately each man was put, as far as practicable, to work for which he had specialized. The medical department of our service overseas came out of this war with a 100 per cent. perfect record.

ANTIVIVISECTIONISTS ATTACK THE RED CROSS

The *Open Door* and the *Journal of Zoophily*, antivivisection journals, recently published "A Call to Arms." This is signed by Mrs. Diana Belais, editor of the *Open Door*. This "manifesto" amounts to a rabid attack on the Red Cross, and was published at about the time the recent Red Cross drive was starting. The attack opens with this appeal: "Please remember the tyrannical methods frequently used by the Red Cross and be prepared to resist them." It closes with the adjuration: "Do not let us weaken our own cause by assisting in placing on our necks indefinitely an incubus like that of the Red Cross." The readers are told that they must fight for "freedom from coercion at the hands of health boards and their medical-political henchmen." What is meant by this "freedom" is indicated by a standing invitation signed by Mrs. Diana Belais on the last page of the cover of the *Open Door*. It is addressed to "all Anti-Vaccinationists, Anti-Vivisectionists, Eclectics, Homeopaths, Chiropaths, Osteopaths, Naturopaths of all branches, Christian Scientists, New Thoughtists, Theosophists, Medical Freedomists . . . to enroll as active participants in an Association of Free People against Medical Tyranny." Certainly the appeal is made in a catholic spirit, at least so far as regards those who are to be included. There may be some "paths" or "ists" omitted, but even those mentioned ought to form a very happy (?) combination. We commiserate our homeopathic and eclectic friends, who undoubtedly have been included without their consent. The attack on the Red Cross—an organization which has done marvelous service for our soldiers at home and abroad—is, if those who make it did but realize, a piece of crass stupidity which cannot fail to create antagonism to the misguided editor of the *Open Door* and her deluded friends. The Red Cross is too deeply rooted in the love and admiration of all people to be disturbed by such nonsense. In their aspirations for notoriety, the rabid antivivisectionists never seem to

hesitate to attack the most philanthropic organization, the most altruistic individual, and even the liberal government which permits them to speak their bigoted utterances without restraint.

THE REWARD OF FASTING

Some of our readers, if there are any whose memory carries them back more than a generation, will recall the popular interest awakened by the demonstrations of the person termed the Great Faster. This individual, Dr. Harry Tanner, who in the eighties of the last century declared that he would live longer than other men by fasting while they ate, drank and were merry, has just died at the age of 91 years. During visits to England in the days of his enthusiasm he actually gave "lessons" on how to fast; and his bold utterances provoked some discussion on the part of both the laity and the profession. The theories that have been advanced to account for exceptional old age are so varied and contradictory that it would be rash indeed to utter a parting "Well done" to the departed faster. The liberal use of tobacco and spirits, as well as the most rigid abstemiousness, have equally been credited with age-prolonging virtues. What the liberal ingestion of sour milk is reputed to have accomplished for some persons in stretching their span of life might equally well be charged to sour grapes in the case of others. And as for the virtues of fasting, they seem to find ever new applications. For one person they form the basis for earnest religious observance; for another they constitute a universal panacea for health; and how far fasting is from being out of fashion is indicated by its popularity at the present moment as a mode of treatment in diabetes. From some of the reports it would seem as if the rationing system of the Germans and their allies, the Turks, had vacillated between rigid economy in nutrition and actual starvation—presumably to the advantage of those who survived. The press notices of the demise of Dr. Tanner leave us somewhat in doubt as to whether the reward of fasting was worth the effort; for the message regarding this "foodless man" contained the laconic sentence: "He is believed to have ended his days without relations."

UNSUCCESSFUL ATTEMPTS TO TRANSMIT INFLUENZA EXPERIMENTALLY

Two extensive attempts have been made under the auspices of the United States Public Health Service and the United States Navy—one at Boston and one at San Francisco—to transmit influenza experimentally.[1] Sixty-eight men from the naval detention camp at Deer Island volunteered for the experiment at Boston. These volunteers had been exposed in some degree to influenza, but most of them gave no history of any illness suggestive of an attack of influenza. Inoculations were made of pure cultures of the influenza bacillus, of secretions from the upper air passages of persons in the early stage of influenza, and of blood from typical cases of influenza. Suspensions of freshly isolated bacilli were introduced into the nose. Both filtered and unfiltered secretions from the air passages of typical cases of influenza in the active stages of the disease were inoculated by means of spraying and swabbing of the nose and throat. Volunteers were placed in very close association for a few minutes with each of ten selected influenza patients, who were instructed to cough directly into their faces. Filtered secretions and the blood from influenza patients were injected subcutaneously into a group of volunteers. In San Francisco the volunteers had not been exposed to influenza at all in the present epidemic, but they had been vaccinated with large doses of a mixed vaccine of influenza bacilli, pneumococci and hemolytic streptococci. In view of the negative results, however, of such vaccinations in controlled experiments,[2] it is believed that this vaccine may be regarded as having no influence. Here also suspensions of influenzal bacilli were iniroduced into the nose. In one group the suspension was first filtered through a Berkefeld candle. Filtered, as well as unfiltered, emulsions of respiratory secretions from active cases of influenza were introduced into the nose. Filtered emulsion was dropped into the eye and injected subcutaneously. Blood taken during the active stages of influenza was injected subcutaneously. Not one of the many volunteers in these two series of experiments developed influenza. Three volunteers who received the filtered secretions developed acute tonsillitis, and in two, cultures gave almost pure growths of hemolytic streptococci. That so many attempts to transmit influenza should fail is a great surprise and disappointment in view of the positive results reported by Nicolle and Le Bailly.[3] The results of these experiments may naturally be the subject of much speculation. However, it is certain that the cause of influenza remains a mystery to be solved only by continued experiment. In the meantime, we must not relax our effort to control the disease and its complications according to the principle that both are droplet infections, with special attention to the probabilities brought out by these experiments that uncomplicated influenza is infectious in the earliest stages of the attack.

1. Some Interesting Though Unsuccessful Attempts to Transmit Influenza Experimentally, Pub. Health Rep. **34**: 33 (Jan. 10) 1919.

2. McCoy, G. W.; Murray, V. B., and Tecter, A. L.: The Failure of a Bacterial Vaccine as a Prophylactic Against Influenza, J. A. M. A. **71**: 1997 (Dec. 14) 1918.

3. Nicolle, Charles, and Le Bailly, Charles: Quelques notions expérimentales sur le virus de la grippe, Compt. rend. Acad. d. sc. **167**: 607, 1918. Is Influenza Due to a Filtrable Virus? editorial, J. A. M. A. **71**: 2154 (Dec. 28) 1918.

Treatment of Enlargement of the Thymus.—A recent abstract in the *Correspondenz-Blatt für Schweizer Aerzte* states that W. Birk insists on the absolutely different clinical picture presented with simple enlargement of the thymus and that with the thymus-lymphatic state. The former, simple enlargement of the thymus, usually develops during fetal existence, and the trachea is compressed by the abnormally large thymus even before birth. Death is the result of suffocation, the already damaged trachea becoming compressed to the point of suffocation. The status thymicolymphaticus, on the other hand, is not congenital, and in this the constitution and the food are of paramount importance, while these have no influence on the congenitally enlarged thymus. But the latter can be modified by the roentgen rays, and Birk reports five cases in which the excessively large thymus promptly shrank to normal size under the exposures. In one case the gland enlarged again later, but in all the others the cure was prompt and permanent.

Medical Mobilization and the War

Personnel of the Medical Corps

For the week ending January 17, there were in the Medical Corps 626 officers. This personnel includes 48 majors, 87 captains and 491 lieutenants. There were in the regular Medical Corps 24,871, a decrease of 1,146 since the previous week. Discharges to date include 10,579 officers.

Distinguished Service Cross Awards

The Distinguished Service Cross has been awarded to the following medical officers:

Passed Assistant Surgeon FREDERICK R. HOOK, U. S. Navy, attached to 5th Regiment United States Marine Corps. "For extraordinary heroism in action near St. Etienne, France, Oct. 4 to 6, 1918. Passed Assistant Surgeon Hook established an advanced dressing station in an exposed position under heavy artillery and machine gun fire. He worked fearlessly and unceasingly giving first aid to the wounded and directing their evacuation until ordered to move to the rear."

First Lieut. JOHN F. WEBER, M. C., U. S. Army, Florence, N. J., assigned 311th Infantry, "For extraordinary heroism in action near Vieville-en-Haye, France, Sept. 29, 1918, Chevieres, France, Oct. 15, 1918, and Grandpre, France, Oct. 25, 1918. On September 29, and the following days, Lieutenant Weber, returned to his aid station under shell and machine gun fire giving medical aid and directing the evacuation of wounded. On October 15 he established an unprotected aid station and was slightly gassed; he continued to give first aid to the wounded and directed their evacuation. On October 25, Lieut. Weber left his battalion in support and continued to the town of Grandpre where he established an aid station, keeping on his work through heavy bombardment of the town."

Lieut. OTHEL J. GEE, M. C., U. S. Army, 20th Field Artillery. "For extraordinary heroism in action near Vieville-en-Haye, France, Sept. 27, 1918. Lieutenant Gee voluntarily ran to the assistance of a wounded soldier, dressed his wounds, and carried him to shelter through severe shell fire."

Passed Asst. Surg. PRESTON ALEXANDER McLENDON, U. S. Navy, attached 5th Regiment, U. S. M. C. "For extraordinary heroism in action near Blancmont, France, Oct. 3 and 4, 1918. During heavy action, Passed Assistant Surgeon McLendon, continually pushed his dressing station to more advantageous positions. Although in great danger because of a severe shelling, Surgeon McLendon dressed his patients in an exposed position, using his dugout for the seriously wounded."

HONORABLE DISCHARGES, MEDICAL CORPS, U. S. ARMY

NOTE.—In the following list, L., signifies lieutenant; C., captain; M., major; L.C., lieutenant-colonel, and Col., colonel.

ALABAMA

Athens—King, C. O. (L.)
Birmingham—King, V. D. (L.)
Scott, E. L. (C.)
Brantley—Horn, S. W. (L.)
Camden—McClurkin, W. N. (L.)
Carrollton—Hill, H. W. (L.)
Clanton—Johnson, A. (L.)
Dora—Tait, P. K. (L.)
Echola—Hall, G. W. (L.)
Ethelsville—Stokes, W. T. (L.)
Heflin—Morgan, J. R. (L.)
Midland—Mixson, W. D. (L.)
Montgomery—Pollard, C. T. (M.)
Nauvoo—Sankey, J. M. (L.)
Pratt City—Cornelius, D. R. (L.)
Pritchard—Long, D. J. (L.)

ALASKA

Anchorage—Lovas, A. (L.)

ARIZONA

Flagstaff—Manning, T. P. (L.)

ARKANSAS

Argenta—Henderson, T. (L.)
Fen Lomond—King, E. R. (L.)
Green Forest—Morrow, F. R. (L.)
Hot Springs—Cook, A. H. (L.)
Little Rock—Chesnutt, C. R. (L.)
Corney, R. B. (L.)
Staples, D. (L.)
Wood, G. C. (L.)
Magazine—Scott, E. E. (L.)
Mansfield—Brown, J. R. (L.)
Monticello—Gates, S. M. (L.)
Paris—Jones, W. E. (L.)
Plumerville—Horton, N. (L.)
Rector—Hughey, M. C. (L.)
Reyno—Smith, R. O. (L.)
Roland—Brooks, C. M. (L.)
Russellville—Gardner, L. (L.)
Texarkana—Embrey, W. S. (L.)
Willow—Thornton, J. D. (L.)

CALIFORNIA

Alameda—Crittenden, C. (L.)
Alleghany—Norman, J. G. (L.)
Berkeley—Scroggs, W. R. (L.)
Coalings—Mountford, G. T. (L.)
Farmington—Terrill, C. L. (L.)
Fresno—Channesian, F. (L.)
Glendale—Smith, H. C. (L.)
Lindsay—Shoemaker, H. R. D. (L.)
Los Angeles—Albert, W. (L.)
Brown, H. V. (C.)
Ferry, F. C. (C.)
Gummess, E. C. (L.)
McIntyre, T. A. (L.)
McKittreck—Hamilton, J. R. (L.)
Montague—Pius, C. (L.)
Oakland—Clark, J. E. (C.)
Palo Alto—Schaupp, K. L. (L.)
Redlands—Burke, W. P. (C.)
Shreck, J. A. (C.)
San Bernardino—Smith, R. M. (L.)
San Diego—Shelton, R. O. (C.)
Taylor, F. W. H. (L.)
San Francisco—Breslin, F. J. (L.)
Ham, J. G. (C.)
Kanzler, R. (L.)
Watsonville—Koepke, F. H. (L.)

CANAL ZONE

Ancon—Meares, W. B., Jr. (L.)

COLORADO

Boulder—Le Rossignol, W. J. (L.)
Colorado Springs—Hills, W. K. (L.)
Denver—Sheldon, R. F. (L.)
Fleming—Van Landerghem, F. P. H. (L.)
Fort Collins—Taylor, T. C. (C.)
Grover—Stewart, J. G. (L.)
Haxtun—McKnight, J. H. (L.)
Montrose—Bell, S. H. (C.)
Pueblo—Heller, F. M. (L.)
Rifle—Smith, A. E. (L.)

CONNECTICUT

Bridgeport—Maxwell, J. A. (L.)
Danielson—Todd, F. P. (C.)
Hartford—Reynolds, H. S. (L.)
New Haven—Churchman, J. W. (L.)
Winternitz, M. C. (M.)

DELAWARE

New Castle—Roth, R. R. (L.)

DISTRICT OF COLUMBIA

Washington—Harvison, D. B. (L.)
MacMurphy, G. Y. (L.)
Mann, J. T. (L.)
Murphy, J. A. (L.)
Thompson, E. D. (C.)

FLORIDA

Glen St. Mary—Crockett, E. W. (L.)
Jacksonville—Beckman, G. E. (L.)
Key West—Plummer, G. R. (M.)
Kissimmee—Geiger, H. S. (C.)
Lee—Mickler, W. S. (L.)
Live Oaks—Chalker, R. E. (L.)
Nocatee—Highsmith, G. F. (L.)
Wauchula—Kayton, M. C. (L.)
Worthington—Phillips, J. O. (L.)

GEORGIA

Adel—Hall, E. J. (L.)
Atlanta—Carothers, J. B. (L.)
Peacock, C. L. (L.)
Speir, R. J. (L.)
Barnett—Howard, P. M. (L.)
Blakely—Alexander, W. H. (L.)
Bronwood—Hooten, C. G. (L.)
Buchanan—Sanford, E. F. (L.)
Carrollton—Barker, H. L. (L.)
Chickamauga—Stiltner, H. F. (L.)
Collins—Harris, J. C. (L.)
Darien—McBryde, S. (L.)
Doles—Johns, S. W. (L.)
Fayetteville—Malone, O. T. (L.)
Fort Valley—Hickson, M. L. (L.)
Jefferson—Campbell, J. H. (L.)
Mears—Mims, F. (C.)
Millen—Mulkey, O. A. (L.)
Milltown—Burch, R. N. (L.)
Morven—Burkhalter, J. F. (L.)
Nelson—Turk, J. P. (L.)
Pinehurst—Lee, J. L. (L.)
Quitman—McMichael, J. R. (L.)
Sasser—Cranford, O. G. (C.)
Savannah—Bishop, E. L. (L.)
Iseman, E. (L.)
Smyrna—Cofer, O. S. (L.)
Sycamore—Harrison, W. A. (L.)

IDAHO

Anthony—Boucher, F. E. (L.)
Ashton—Hargis, D. L. (L.)
Blackfoot—Simmons, H. J. (L.)
Boise—Falk, R. (C.)
Buhl—Irmen, F. A. (L.)
Cottonwood—Shinnick, J. D. (C.)
Idaho Falls—Spencer, H. D. (C.)
Kellogg—Hardy, E. E. (L.)
Parma—Allen, C. B. (C.)
Peck—Lyle, J. M. (L.)
Ropert—Elmore, E. H. (L.)
Troy—Henkle, C. K. (L.)

ILLINOIS

Apple River—Brink, C. A. (C.)
Rogde, J. (L.)
Aurora—Rogers, P. E. (L.)
Uehren, W. A. (C.)
Banner—Botts, G. S. (L.)
Barrington—Barbee, M. (L.)
Barry—Johnson, C. A. (L.)
Batavia—West, J. C. (C.)
Belleville—Huwatcheck, F. G. (L.)
Jacobson, R. W. J. (L.)
Benld—Tripodi, A. (L.)
Bloomington—Brian, F. W. (C.)
Blue Island—McCowan, D. G. (L.)
Canton—Rogers, H. H. (L.)
Carrollton—Hensler, L. J. (L.)
Charleston—Shaffer, H. A. (L.)
Chatsworth—Sloan, O. J. (L.)
Chicago—Allen, G. D. (L.)
Apfelbach, G. L. (L.)
Arkin, M. L. (L.)
Augustus, B. (L.)
Bau, H. W. (L.)
Bernstet, C. M. (L.)
Blakeman, L. J. (L.)
Buran, D. D. (L.)
Claggett, A. N. (C.)
Cohn, E. J. (L.)
Conroy, C. L. (C.)
Czajkowski, S. (L.)
Ellison, A. O. (L.)
Eustice, E. L. (L.)
Fisher, F. A. (C.)
Funkhouser, O. B. (L.)
Gates, G. F. (L.)
Goetzinger, C. F. (L.)
Goone, W. N. (L.)
Harkness, C. A. (L.)
Hartwell, B. O. (L.)
Henkin, H. (L.)
Hofman, H. (L.)
Hutton, J. H. (L.)
Johnston, J. A. (L.)
Kerr, G. A. (L.)
Kloos, F. C. (L.)
Knoll, R. F. (L.)
Kositchek, S. B. (L.)
Chicago—Kramer, J. H. (L.)
Kraus, H. A. (L.)
Krogh, C. A. (L.)
Leatherwood, T. F. (L.)
Oliver, L. B. E. (L.)
Pond, D. B. (M.)
Pratt, G. N. (M.)
Robins, C. A. (L.)
Scheier, A. M. (L.)
Sheldon, H. D. (L.)
Siegel, M. (L.)
Snyder, P. F. (L.)
Sullivan, H. S. (L.)
Sutch, A. K. (L.)
Tabenski, L. (L.)
Wayland, S. (C.)
West, S. G. (C.)
Clinton—Carter, C. W. (C.)
Dunlap—Fitch, F. T. (L.)
Durand—Kassmeyer, J. C. (L.)
Effingham—Holman, C. C. (L.)
Elizabeth—Hagie, F. E. (L.)
Eureka—Smith, R. H. (L.)
Fairview—Crouch, W. L. (L.)
Farmer City—Hathaway, R. M. (L.)
Flora—Finch, R. D. (L.)
Forrest—Hamilton, O. P. (L.)
Galesburg—Tate, L. N. (C.)
Greenbush—Pittman, S. M. (L.)
Harvey—Steiner, I. W. (L.)
Herrin—Boles, D. S. (L.)
Joliet—Chmelik, F. J. (L.)
Kincaid—Klein, G. C. (L.)
Macomb—Knappenberger, G. E. (L.)
Mason City—Caton, W. M. (L.)
Mattoon—Baker, J. G. (C.)
Hardinger, B. H. (L.)
Morrison—Sullivan, E. P. (C.)
Nokomis—Hoyt, J. M. (L.)
Odell—Tombaugh, J. L. (L.)
Ottawa—Parr, S. E. (L.)
Paris—Slaughter, A. W. (L.)
Pawpaw—Avery, W. M. (L.)
Pekin—Balcke, W. A. (C.)
Polo—Inks, F. E. (L.)
Princeton—Nix, M. A. (L.)
Princeville—Fuson, A. A. (L.)
Red Bud—Le Saulnier, H. L. (L.)
Rockford—Boswell, C. H. (L.)
Rockport—Gay, F. S. (L.)
Rossville—Howard, E. E. (L.)
Seneca—Coulter, W. E. (L.)
Springfield—Compton, C. W. (C.)
Mautz, G. J. (L.)
Tallula—Valentine, R. E. (L.)
Utica—Antle, J. S. (L.)
Vermont—Boynton, L. (L.)
Virginia—McGee, J. A. (L.)
Waukegan—Foley, J. C. (C.)
Waynesville—Marvell, J. E. (L.)

INDIANA

Ashley—Cunningham, H. L. (L.)
Brazil—Hawkins, R. W. (L.)
Bremen—Schilt, T. S. (L.)
Crothersville—Adair, W. K. (L.)
East Chicago—Johns, D. R. (L.)
Farmersburg—Oliphant, J. T. (L.)
Fishers—Black, V. G. (L.)
Fort Wayne—Van Buskirk, E. M. (C.)
French Lick—Beatty, G. S. (C.)
Gary—Greene, G. S. (C.)
Kan, A. M. (L.)
Toner, T. J. (C.)
Greenfield—Bruner, C. H. (L.)
Ramsey, R. B. (L.)
Huntingburg—Steinkamp, E. F. (L.)
Indianapolis—Christie, J. P. (L.)
Hendricks, A. H. (L.)
Lemmon, H. J. (L.)
Kokomo—Scott, W. I. (L.)
Lowell—Iddings, J. W. (C.)
Marengo—Grant, P. T. (L.)
Marion—Brown, C. R. (L.)
Marysville—Smith, T. M. (L.)
Mishawaka—Bostwock, J. G. (L.)
Breach, C. A. (C.)
New Augusta—Asher, E. O. (L.)
Noblesville—Sturdevant, J. D. (C.)
North Vernon—Green, J. H. (L.)
Paoli—Lingle, S. L. (L.)
Potoka—Arthur, M. L. (C.)
Richmond—Bramkamp, A. L. (C.)
South Bend—Cooper, H. L. (L.)
Savery, C. E. (L.)
Tennyson—Spradley, L. G. (L.)
Union City—Ruby, F. M. (L.)
Uttica—Bagby, W. A. (L.)
Valparaiso—Baker, N. A. (L.)
Walton—Flanagan, E. P. (L.)
Hatfield, J. F. (L.)
West Terre Haute—Shanklin, V. A. (L.)
Whiteland—Williams, L. P. V. (C.)

IOWA

Anita—Becker, R. A. (L.)
Bellevue—Lampe, E. L. (L.)
Birmingham—Strickling, F. E. (L.)
Brooklyn—Simeral, F. E. (L.)
Burt—Clapsaddle, J. G. (L.)
Cedar Falls—Van Dyek, J. H. (L.)
Clear Lake—Scanlon, F. T. (C.)
Columbus Junction—Huston, D. F. (L.)
Davenport—Bawden, G. S. (L.)
Stoecks, W. A. (C.)
Dickens—Bruce, J. H. (L.)
Dubuque—Walker, J. M. (C.)
Eldora—King, D. O. (L.)
Greene—Stober, R. W. (L.)
Lehigh—Gibson, G. (L.)
Low Moor—Luse, R. F. (L.)
Mason City—Brisbine, R. E. (L.)
Morley—Jacobs, T. D. (L.)
Nodaway—Worley, W. H. (C.)
Ottumwa—Newell, F. W. (L.)
Rockford—Yenerich, C. O. (L.)
Ryan—Cummings, W. C. (L.)
Sheldon—Brackney, H. J. (C.)
Sioux City—Reeder, J. E. (L.)
Waterloo—Nesbitt, W. M. (L.)
Whiting—Ingham, P. G. (L.)
Stauch, M. O. (L.)
Woodburn—Bowen, F. S. (L.)

KANSAS

Abilene—Attwood, C. F. (L.)
Athol—Scott, W. W. (L.)
Baxter Springs—Scott, W. R. (L.)
Bronson—Tanquary, E. D. (L.)
Burdick—Lovene, A. W. (L.)
Chanute—Baird, O. C. (C.)
Columbus—Brookhart, H. H. (L.)
Concordia—Laing, R. (L.)
Crestline—Iliff, W. H. (L.)
Dodge City—Munford, R. H. (L.)
Dwight—Brethour, G. E. (L.)
Florence—Brakebill, M. L. (L.)
Galena—Browne, H. A. (C.)
Havensville—McManis, J. E. (L.)
Hoisington—Brown, T. J. (L.)
Hoyt—Talbot, H. B. (L.)
Kansas City—Reeves, E. A. (C.)
Smith, G. H. (L.)
Kingman—Longenecker, C. W. (L.)
Mayetta—Austin, O. W. N. (L.)
National Military Home—Fryer, J. L. (M.)
Norton—Cassel, O. M. (L.)
Sabetha—Haynes, A. H. (L.)
Salina—Loyd, P. A. (L.)
Sedan—Landin, G. D. (L.)
Shawnee—Thomas, B. D. (L.)
Sterling—Bentley, H. M. (L.)
Topeka—Loveland, F. L. (L.)
O'Connell, J. H. (L.)
O'Connor, T. A. (L.)
Turon—Grieve, G. H. (L.)
Walnut—Mehrle, M. (L.)
Waterville—Coe, W. B. (C.)
Wichita—Fisher, R. S. C. (L.)
Johnson, C. N. (L.)
Matteson, G. W. (L.)
Shirley, G. H. (L.)
Sutter, L. A. (L.)

KENTUCKY

Baskett—Hodges, J. R. (L.)
Carrollton—Gaines, F. M. (C.)
Chaplin—Nichols, W. P. (L.)
Covington—Nelson, T. H. (L.)
Sallee, T. (L.)
Wilson, H. F. (C.)
De Mossville—Mann, H. F. (L.)
Earlington—Morse, W. L. (L.)
Ekron—Stith, S. H. (L.)
Guthrie—Frey, E. M. (C.)
Harrodsburg—Coleman, D. H. (L.)
Hazel—Crawford, R. P. (L.)
Hickory—Shelton, W. J. (L.)
Kevil—Rudolph, L. (L.)
Knottsville—Popham, A. E. (L.)
Lancaster—Acton, J. M. (L.)
Lexington—Van Meter, B. F. (C.)
Louisville—Leachman, G. C. (M.)
Stroud, J. B. (L.)
McKinney—Smith, J. B. (C.)
Owensboro—McGary, J. R. (L.)
Sumner, R. S. (L.)
Owenton—Chrisman, J. H. (C.)
Paducah—Shemwell, A. H. (L.)
Quail—McWilliams, W. E. (L.)
Valley Station—Shacklette, W. G. (L.)

LOUISIANA

Belmont—Litton, W. L. (L.)
New Orleans—Estopinal, J. A. (C.)
Latiolais, T. (L.)
Miller, H. E. (L.)
Scharff, E. S. (L.)
Shaw—Pittman, J. L. (C.)
St. Francisville—Barrow, A. F. (C.)

MAINE

Augusta—Kupelian, N. S. (L.)
Bingham—Hopkins, P. O. (L.)
Lewiston—Roy, L. O. (L.)

MARYLAND

Adamstown—Hume, R. C. (L.)
Baltimore—Beasley, E. B. (L.)
Kearney, F. X. (L.)
Timberlake, G. (M.)

MASSACHUSETTS

Ashburnham—Bates, C. A. (L.)
Beverly—Murphy, D. F. (L.)
Boston—Allard, C. E. (L.)
Buckley, W. S. (C.)
Capelle, C. S. (C.)
Faulkner, W. E. (M.)
McCormack, J. S. (L.)
Sanborn, J. W. (C.)
Sheldon, R. F. (L.)
Brockton—Callahan, J. F. (C.)
Brookline—Connolly, J. E. (L.)
Sexton, F. J. (C.)
Chelsea—Marnoy, S. L. (L.)
Cliftondale—Harris, L. W. (L.)
Fall River—Kaufman, S. B. (L.)
Holyoke—Cavanaugh, T. E. (C.)
Housatonic—O'Connor, A. M. (L.)
Lawrence—Levek, J. A. (L.)
Reed, V. A. (C.)
Leominster—Shultis, F. C. (C.)
Lynn—Gray, G. H. (M.)
Hoitt, C. L. (L.)
Trask, J. W. (C.)
Marks—Neal, S. F. (L.)
Mellis—Hill, E. L. (L.)
North Adams—Crofts, N. M. (L.)
Pittsfield—Norton, T. J. (L.)
Somerville—Walker, H. A. (L.)
Springfield—Metivier, A. O. (L.)
Sweeney, E. J. (C.)
Taunton—Sayles, J. B. (C.)
Webster—Smith, E. E. (L.)
Williamsett—Mead, F. A. (L.)
Winchester—Maynard, H. E. (C.)

MICHIGAN

Adrian—Hewes, A. B. (L.)
Allegan—Osman, E. D. (C.)
Crystal Falls—Rovik, L. E. (L.)
Detroit—Brooks, C. D. (M.)
Brownell, W. S. (C.)
Brunke, B. B. (L.)
Burns, J. K., Jr. (L.)
Hargrave, D. V. (C.)
Honhart, F. L. (L.)
Palmer, A. A. (L.)
Robinson, M. B. (L.)
Sachnovitz, M. (L.)
Shafer, H. A. (C.)
Sherman, W. L. (L.)
Truesdell, C. E. (L.)
Turrell, C. M. (L.)
Edenville—Heslop, J. E. (L.)
Flint—Houton, J. H. (L.)
Stampa, S. (L.)
Flushing—Smith, D. C. (L.)
Ganges—Brunson, E. T. (L.)
Jackson—Hurley, H. L. (L.)
Marsh, D. B. (L.)
Lansing—Ellis, C. W. (L.)
Linden—Sleeman, B. R. (L.)
Livering—Brown, J. B. (C.)
North Port Point—Owsley, P. O. (L.)
Ovid—Taylor, R. M. (L.)
Saginaw—English, W. F. (M.)
Pike, N. J. (C.)

MINNESOTA

Akeley—Goodheart, C. J. (L.)
Appleton—Shelver, H. J. (L.)
Belview—Aldrich, F. H. (C.)
Benson—Kolset, C. D. (L.)
Duluth—Olson, O. S. (L.)
Schwartz, A. H. (L.)
Fergus Falls—Kittelson, T. N. (L.)
Glenville—Freeman, J. P. (C.)
Granite Falls—Eisengraeber, G. A. (L.)
Hibbing—Carstens, C. F. (L.)
Little Falls—Holst, C. F. (L.)
Long Lake—Nickerson, W. S. (C.)
Milaca—Olsen, S. H. (L.)
Minneapolis—Klint, A. J. (L.)
Lysne, H. (L.)
Nannestad, J. R. (L.)
Nedergaard, N. (L.)
Silvertsen, A. (L.)
Tanner, A. C. (C.)
Ortonville—O'Donnell, D. M. (L.)
St. Cloud—Stangl, P. E. (L.)
St. Paul—Jarvis, B. W. (L.)
McCarthy, W. R. (L.)
Neher, F. H. (L.)
Windom—Ravn, B. (L.)

MISSISSIPPI

Booneville—Jones, O. C. (L.)
Clarkesdale—Sauls, J. D. (L.)
Clinton—Middleton, C. S. (C.)
Cruger—Chester, A. D. (L.)
Holly Bluff—Mecklin, H. H. (L.)
Jackson—Lea, J. W. (M.)
Pace—Danner, J. J. (L.)
Pinola—Kyger, A. F. (L.)
Sledge—Oliver, H. B. (L.)
Starkville—Barr, F. E. (L.)

MISSOURI

Affton—Kelley, W. L. (L.)
Atlanta—Cambre, A. L. (L.)
Boonville—Van Ravenswaay, C. H. (C.)
Brunswick—Austin, M. B. (C.)
Cameron—Stockfieth, P. H. (L.)
Center—Norton, H. B. (L.)
Chillicothe—Grace, C. M. (L.)
Creighton—Levens, W. B. (L.)
Desloge—Turley, J. G. (L.)
East Prairie—Finley, F. L. (C.)
Fair Grove—Edmondson, M. T. (L.)
Fulton—McCubbin, J. B. (L.)
Hardin—Stapp, J. H. (L.)
High Hill—Best, J. (L.)
Hughesville—Bishop, W. T. (C.)
Kansas City—Crawford, J. R. (L.)
Mackey, J. F. (C.)
McCartney, O. P. (L.)
Outland, J. H. (M.)
Sawyer, T. T. (C.)
Kirkwood—Worth, D. S. (C.)
La Grange—Hamlin, J. R. (L.)
Marceline—Scott, J. B. (L.)
Maryville—Bell, C. T. (C.)
Mendon—Orr, C. A. (L.)
Monett—Boehm, J. D. (L.)
Osceola—Sullivan, E. W. (L.)
Otterville—Osborne, C. D. (L.)
Poplar Bluff—Cadwell, V. (C.)
Princeton—Laws, C. J. (L.)
Roscoe—Stratton, C. S. (L.)
St. Joseph—Hunt, W. J. (L.)
Simmons, B. B. (C.)
Stevenson, G. R. (L.)
St. Louis—Boogher, F. (C.)
Briggs, G. Y. (C.)
Byrd, R. L. (L.)
Eck, P. A. (L.)
Ewing, F. C. (M.)
Glazer, M. J. (L.)
Gzell, R. (L.)
Henke, C. F. (L.)
Kirsch, F. W. (L.)
O'Connell, J. (L.)
Scherer, P. H. (L.)
Smith, F. J. (L.)
Toomey, T. N. (L.)
Williamsburg—Courshon, A. J. (L.)

MONTANA

Billings—Graham, J. H. (L.)
Circle—Koehler, H. L. (L.)
Great Falls—Keenan, F. E. (L.)
Helena—Horsky, R. (M.)
Joplin—Palm, W. G. (L.)
Miles City—Buskirk, W. H. (C.)
Poplar—Harris, H. G. (L.)
Stockett—Smith, W. R. (L.)

NEBRASKA

Beatrice—Tyrrell, A. A. (L.)
Central City—Boyd, E. E. (C.)
Danbury—Ryan, M. (L.)
Exeter—Craft, R. R. (L.)
Franklin—Feese, J. P. (C.)
Gothenburg—Stevenson, E. C. (C.)
Hastings—Carson, W. T. (C.)
Herman—Cameron, A. J. (C.)
Holstein—Kidder, C. E. (L.)
Memphis—Packer, J. M. (L.)
Omaha—Johnston, R. S. (L.)
McCrann, W. J. (L.)
McGuire, L. D. (L.)
Swoboda, J. P. (L.)
Ravenna—Buol, G. (L.)
Scottsbluff—Stoops, J. N. (L.)
Sprague—Lamb, W. E. (L.)
Wallace—Newman, J. C. (L.)

NEW HAMPSHIRE

Concord—Johnson, G. A. (L.)
Henniken—Cole, C. J. (L.)
Laconia—Hout, P. R. (L.)

NEW JERSEY

Asbury Park—Fitch, G. W. (C.)
Butler—McDonald, R. J. (L.)
East Orange—Straub, H. H. (L.)
Elizabeth—Schlichter, C. H. (L.-C.)
Graitwood—Brundage, P. E. (C.)
Irvington—Simmons, A. V. V. (L.)
Jersey City—Johnston, H. H. (L.)
Largay, A. O. (L.)
Maines, A. T. (L.)
Jersey City—Murphy, E. A. (L.)
Ovens, R. C. (L.)
Shipman, F. C. (L.)
Newark—Benton, N. K. (C.)
Lippincott, J. D. (M.)
Martine, F. L. (L.)
Matheke, O. G. (L.)
Nydes, J. (L.)
Orange—Trautmann, H. (L.)
Paterson—McDede, F. F. (C.)
Spickers, W. (L.)
Princeton—Freese, J. A. (C.)
West Hoboken—Allen, I. L. (L.)
West Orange—Eveleth, C. W. (C.)

NEW MEXICO

Artesia—Stroup, H. A. (L.)
Dawson—Elliott, C. B. (L.)
Johnson, W. E. (L.)
Roswell—Anderson, F. L. (C.)
Swearingen, D. D. (C.)

NEW YORK

Attica—Stedman, E. B. (L.)
Batavia—Lessur, H. H. (L.)
Bedford Hills—Briggs, E. F. (C.)
Brockport—Waterman, M. R. (C.)
Brooklyn—Bliss, R. F. (L.)
Colson, J. D. (L.)
Rauh, M. T. (L.)
Saltzman, E. A. (L.)
Siudzinski, M. R. (L.)
Stephany, A. R. (L.)
Buffalo—Babcock, L. K. (L.)
Brumbert, D. (L.)
Burke, J. P. F. (M.)
Cooley, R. L. (L.)
Jones, W. H. (L.)
Jung, D., Jr. (L.)
Michel, G. P. (L.)
Thompson, M. A. (L.)
Clifton Springs—Nicholson, S. T. (L.)
Elmira—Palmer, W. A. (L.)
Hudson—Bradley, O. H. (L.)
Newark—Kelley, L. S. (L.)
New York—Barker, P. M. (C.)
Barsky, M. H. (L.)
Blood, R. G. (L.)
Bloom, N. N. (L.)
Blue, G. E. (L.)
Bright, A. C. (L.)
Calvelli, A. F. (L.)
Chambers, A. L. (L.)
Clery, B. (L.)
Costigan, G. (C.)
Fincke, H. S. (C.)
Frankfeldt, F. M. (L.)
Jennings, E. A. (L.)
Jones, L. J. (L.)
Kugel, I. H. (L.)
Larkin, C. L. (L.)
Lenetska, W. (L.)
Mintz, M. E. (L.)
Moffett, R. D. (M.)
Morton, H. T. (M.)
O'Connor, J. M. (L.)
Riley, H. A. (C.)
Rock, S. W. (L.)
Schechter, J. (L.)
Scheer, H. M. (L.)
Shapiro, I. F. (L.)
Shipton, G. M. (L.)
Staab, E. A. (L.)
Stack, T. V. (L.)
Stein, S. (L.)
Sullivan, A. B. (L.)
Taylor, C. C. (L.)
Whitbeck, B. H. (M.)
Niagara Falls—Childs, C. C. (L.)
Oneonta—Lang, L. S. (L.)
Parish—Ingalls, S. S. (L.)
Rochester—Goler, G. W. (C.)
St. John, H. L. (L.)
Spencerport—Lenhart, C. G. (L.)
Syracuse—Devine, R. J. (L.)
Tannersville—Baldwin, H. G. (L.)
Van Etten—Colegrove, B. F. (C.)
Warsaw—Crawford, J. F. (L.)
Yonkers—Kunstler, M. B. (L.)

NORTH CAROLINA

Asheville—Adams, J. L. (L.)
Cove City—Milbee, R. O. (L.)
East Flat Rock—Cliff, B. F. (L.)
Norwood—Hatchcock, T. A. (C.)
Raeford—Thomas, W. C. (L.)
Statesville—Carpenter, F. A. (C.)
Wadesboro—Maynard, J. D. (L.)
Wadeston—Henry, T. B. (L.)
Wilmington—Bowdoin, G. E. (L.)

NORTH DAKOTA

Bismarck—Mella, H. (L.)
Jamestown—Gerrish, W. A. (M.)
Langdon—Towey, J. W. (L.)

OHIO

Akron—Malloy, E. B. (L.)
Amherst—McQueen, A. F. (L.)
Barnesville—Stephens, W. E. (L.)
Belleville—Caris, T. (L.)

Caneen Camp—McNamara, J. G. (L.)
Cincinnati—Leeds, H. N. (L.)
Sater, C. (L.)
Tevelure, W. A. (L.)
Circleville—Holman, A. W. (L.)
Clark—Van Hyning, H. B. (L.)
Cleveland—Blahd, M. E. (C.)
Hanzlik, P. J. (C.)
Hunter, J. A. (L.)
Krebs, P. H. (L.)
Phillips, J. (C.)
Columbus—Hershowitz, L. M. (L.)
Sullivan, T. J. (C.)
Dayton—Henderson, O. C. (L.)
Springer, H. A. (L.)
Stuteman, L. E. (L.)
Swisher, W. H. (L.)
Defiance—Lauber, E. J. (L.)
Eaton—Treffinger, C. M. (L.)
Geneva—Sherwood, Z. O. (L.)
Lakewood—Pullen, G. W., Jr. (L.)
Loveland — Haarlammert, C. J. (L.)
Montpelier—Bechtol, E. A. (L.)
Paulding—Russell, D. F. (L.)
Portsmouth—McCormick, T. G. (L.)
Southington—Kennedy, S. V. K. (L.)
Spencerville—Baxter, I. D. (L.)
Springfield—Hall, F. E. (L.)
Hutchings, S. R. (L.)
Kent, A. R. (L.)
Riley, J. H. (L.)
Thornville—Lethmann, O. J. (L.)
Toledo—May, E. G. (L.)
Stamm, J. (L.)
Vetter, E. F. (L.)
Wapakoneta—Hunter, R. C. (L.)
Warrensville—Kehres, E. J. (L.)
Washington—Todhunter, E. F. (L.)
West Chester—Chamberlin, C. J. (L.)
Westerville—Junkerman, U. Z. (L.)
West Union—Sproull, O. T. (L.)
Youngstown—Blaine, W. M. (C.)
Nutt, G. S. (L.)
Zanesville—Matthews, D. J. (L.)

OKLAHOMA

Ada—Lewis, M. L. (L.)
Arcadia—Baker, R. C. (L.)
Broken Bow—Sherrill, R. H. (L.)
Cement—Vann, W. H. (L.)
Dilworth—Bishop, H. H. (L.)
Duncan—Nieweg, J. W. (L.)
Granite—Nunnery, A. W. (L.)
Hugo—Shull, R. J. (L.)
Kaw—Barker, C. J. (L.)
Ketchum—Prowell, J. W. (L.)
Muskogee—Lanning, J. M. (L.)
Vittus, J. S. (C.)
Oklahoma City—Hirshfield, A. C. (L.)
Shattuck—Newman, O. C. (L.)
Spiro—Hartshore, W. O. (L.)
Tulsa—Buchanan, J. M. (L.)
Vian—Bryan, C. (C.)

OREGON

Heppner—Allison, H. T. (L.)
Portland—Brooks, F. M. (C.)
Cantrill, A. H. (L.)
Levy, M. M. (L.)
Trimble, W. A. (L.)
Redmond—Hosch, J. F. (L.)
Westfall—Schenk, H. J. (L.)

PENNSYLVANIA

Allentown—Price, J. B. (L.)
Quinn, S. A. (L.)
Altoona—Metzger, C. H. (L.)
Bellefonte—Rice, C. W. (L.)
Cassville—Koshland, J. C. (L.)
Coaldale—Burns, J. V. (L.)
Fayette City—Stollar, B. L. (L.)
Glen Olden—Gallagher, H. (C.)
Glen Rock—Noll, P. A. (L.)
Grindstone—Spears, A. W. (L.)
Grove City—McConnell, E. M. (L.)
Harrisburg—Rebuck, C. S. (C.)
Hazleton—Owens, H. J. (L.)
Homestead—Brown, W. E. (L.)
Imperial—Sprowle, G. M. (L.)
Johnstown—Barbour, M. A. (L.)
Keiper, J. D. (L.)
Kittanning—McKee, T. N. (L.)
Latrobe—Megahan, A. R. (L.)
Lebanon—Rutherford, F. A. (L.)
Lock Haven—Armstrong, W. N. (L.)
Mercer—Hope, P. T. (L.)
Nesquehoning—Shutack, J. (L.)
New Castle—Campbell, W. L. (C.)
New Paris—Shoenthal, H. I. (L.)
Petersburg—Keichline, J. M. (L.)
Philadelphia—Barthmaier, O. F. (C.)
Boyd, G. M. (C.)
Busler, H. S. (L.)
Chernaik, S. J. (L.)
Farr, W. W. (C.)
Morgan, A. C. (C.)
Ridpath, R. F. (C.)
Scanlon, L. F. (L.)
Steele, W. E. (L.)
Stout, P. S. (L.)
Pittsburgh—Baird, J. A. (C.)
Burleigh, W. T. (L.)
Ertzman, R. L. (C.)
Hauck, C. A. (L.)
Henninger, C. H. (M.)
Johnston, J. R. (L.)
Kamens, A. F. (L.)
Koch, S. L. (L.)
Kriess, W. K. (L.)
Nevins, H. (L.)
Seraphin, A. R. (L.)
Sleppy, R. E. (C.)
Stewart, R. C. M. (L.)
Pittston—Rubinstein, H. (L.)
Quakertown—Moyer, W. G. (L.)
Reading—Haws, R. J. (L.)
Leinbach, H. M. (L.)
Rural Valley—Kroh, L. F. (L.)
Saylorsburg—Boyer, H. H. (L.)
Scranton—Budd, F. T. (C.)
Hobbs, H. K. (L.)
McLaine, E. A. (L.)
Towanda—Holcombe, G. T. (L.)
Wayne—Lincoln, C. W. (C.)
West Middlesex—Tinker, B. L. (L.)
West Philadelphia—Biddle, S. G. (L.)
Wilkinsburg—Kirkpatrick, G. H. (L.)
Williamsport—Boyer, W. E. (L.)

RHODE ISLAND

Providence—Papavasillious, V. K. (L.)
Sohn, B. J. (L.)
Westerly—Champlin, J. (C.)

SOUTH CAROLINA

Clover—Pressly, J. E. (L.)
Greenwood—Marshall, J. L. (L.)
Lancaster—Brown, R. C. (C.)
Little Mountain—Tarrant, J. W. (L.)
Union—Switzer, P. K. (L.)

SOUTH DAKOTA

Huron—Sprague, B. H. (L.)
Tschetter, J. S. (L.)
Redfield—Chapman, W. S. (L.)
Wagner—Frink, R. P. (C.)

TENNESSEE

Arlington—Harvell, W. T. (L.)
Brunswick—Smith, W. H. (L.)
Campbellsville—Hulme, F. B. (L.)
Chattanooga—Bibb, J. L. L. (L.)
Lake, W. F. (L.)
Coalmont—Alder, G. B. (L.)
Coldwater—Hayes, A. G. (L.)
Daysville—Niler, F. A. (L.)
Knoxville—Guynes, E. A. (L.)
Henderson, J. V. (L.)
Lott, H. L. (L.)
Laconia—Ricks, L. L. (L.)
Memphis—Blue, J. B. (L.)
Mobley, J. C. (L.)
Nashville—Bryan, J. L. (L.)
Sherber, A. L. (C.)
Sikes, A. T. (L.)
Petersburg—Marsh, C. P. (L.)

TEXAS

Bells—McDonald, S. E. (L.)
Blackwell—Latham, J. B. (L.)
Brashear—Saunders, W. B. (L.)
Celeste—Williams, E. W. R. (C.)
Clarendon—Stricklin, C. G. (L.)
Clarksville—Scaff, C. D. (L.)
Commence—Hollerness, J. R. (L.)
Dallas—Bullington, S. D. (C.)
Calhoun, J. S. (L.)
Nash, A. W. (L.)
Spurgia, A. M. (C.)
Stephenson, J. H. (L.)
Donna—Gray, G. L. (L.)
El Paso—Brown, C. P. (C.)
Strong, E. D. (L.)
Floydada—Massie, J. H. (L.)
Fort Worth—Foster, L. O. (L.)
Hockley—Akehurst, R. L. (C.)
Kingsville—Bartlett, G. (C.)
McGregor—Connally, W. P. (C.)
Memphis—Balley, J. M. (C.)
Midlothian—Harris, J. P. (L.)
Moody—Marshall, O. R. (C.)
Quanah—Frizzell, T. D. (C.)
San Antonio—Chipley, B. L. (L.)
Long, N. (L.)
Martin, R. F. (L.)
Traylor, W. (L.)
Sequin—Neighbors, A. H. (L.)
Sharon—Bryant, A. J. (L.)
Springtown—Sturges, S. I. (L.)
Staples—Liles, B. B. (L.)
Uvalde—Carroll, J. D. (L.)
West—Thomas, J. H. (C.)
Whitewright—Johnson, C. P. (L.)
Wolfe City—Cheatham, J. C. (C.)

UTAH

Salt Lake City—Calonge, S. D. (C.)
Openshaw, C. R. (C.)
Sunnyside—Bash, W. H. (L.)

VERMONT

Barre—Lazell, W. E. (C.)
Bennington—Cole, J. H. (C.)
Burlington—Latour, G. E. (L.)
Newbury—McKinley, L. E. (L.)
Rutland—Townsend, W. M. (M.)
Vergennes—Carroll, D. J. (L.)

VIRGINA

Nathalie—Lacy, J. B. (L.)
Orange—Tayloe, L. P. (L.)
Richmond—Bear, J. (L.)
South Boston—Owen, J. A. (L.)
Toms Creek—Carr, C. C. (L.)
Winchester—Anderson, C. R. (C.)

WASHINGTON

Pullman—Harris, J. L. (L.)
Seattle—Lundy, L. F. (L.)
Tacoma—Neulen, E. N. (L.)

WEST VIRGINIA

Belleville—Bossard, S. L. (L.)
Buckhannon—Beer, O. B. (C.)
Edgarton—Hite, W. B. (L.)
Follansbee—Burke, C. P. (L.)
Harrisville—Keith, T. W. (L.)
Huntington—Le Sage, I. R. (L.)
Jarrods Valley — Hunter, R. L. (L.)
Junior—Mitchell, R. C. (L.)
Leon—Sommer, B. F. (L.)
Middleton—Barr, J. M. (L.)
Minden—Linder, W. L. (L.)
Newburg—Kimble, J. U. (L.)
Newell—Turk, H. A. (L.)
Spencer—Casto, H. L. (L.)
Staats, M. H. (C.)

WISCONSIN

Alma Center—MacCormack, R. L. (L.)
Ashland—Andrus, A. D. (L.)
Bagley—Mecum, J. M. (L.)
Baraboo—Cahoon, R. (L.)
Black River Falls—Kalling, H. (L.)
Bloomington—Baldwin, F. H. (L.)
Boyd—Myre, C. F. (C.)
Campbellsport — Hoffmann, L. A. (L.)
Cudahy—Thompson, E. X. (L.)
Elroy—Ferguson, F. H. (C.)
Fort Atkinson—Bennett, L. J. (C.)
Hancock—Treichler, M. J. (L.)
Janesville—Shearer, F. E. (L.)
Kenosha—Adair, J. W. (L.)
La Crosse—Jacobson, V. C. (L.)
Marinette—Berglund, S. (L.)
Boren, J. W. (C.)
Milwaukee—Braun, R. F. (L.)
Foley, L. J. (L.)
Fox, W. E. (L.)
Heffron, J. J. (L.)
Hyde, W. G. (L.)
Savage, G. T. (L.)
Valentine, L. P. A. (C.)
New Glarus—Hefty, C. A. (L.)
Platteville—Andrew, C. H. (C.)
Racine—Anderson, J. (L.)
Christensen, F. C. (L.)
Corr, J. T. (C.)
Reedsville—Cary, E. C. (L.)
Sparta—Beebe, C. M. (L.)
Spring Valley — Conway, J. M. (L.)
Superior—Charbonneau, E. (L.)
Ekblad, V. E. (L.)
Hatch, W. E. (L.)
Wales—Reineking, W. C. (L.)
Wauwatosa—Schmidt, H. E. (L.)

WYOMING

Kemmerer—Kindall, L. E. (L.)
Rock Springs—Chipman, B. (L.)
Lauzer, E. S. (L.)

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Williamsbridge, N. Y., from Camp Meade, Capt. J. H. ASHCRAFT, Fayette.

Arizona

To New Haven, Conn., from Fort Oglethorpe, Major M. D. COHEN, Bisbee.

Arkansas

To Fort Logan H. Roots, Ark., from Camp Sheridan, Lieut. R. C. WOLFE, Little Rock.

To Lonoke, Ark., Eberts Field, from San Antonio, Lieut. D. R. WILSON, Fayetteville.

California

To Army Medical School, from Camp Meigs, Lieut. P. L. WISE, San Jose.

To Camp Kearney, Calif., base hospital, from Fort Oglethorpe, Lieut. J. G. WARE, Los Angeles.

To Fort Des Moines, Iowa, from Camp Shelby, Lieut. O. P. STOWE, Mill Valley; from Camp Travis, Lieut. J. J. KAVANAGH, San Francisco; from Camp Upton, Lieut. H. H. McCOY, San Francisco.

To San Diego, Calif., Rockwell Field, from Sacramento, Capt. P. DE OBARRIO, San Francisco.

To San Francisco, Calif., Letterman General Hospital, from Camp Kearney, Lieut. T. J. NOLAN, San Francisco.

To Washington, D. C., from Pittsburgh, Capt. H. J. PRUETT, San Francisco.

Colorado

To Camp Grant, Ill., from Fort Riley, Lieut. L. H. RUEGNITZ, Denver.

To Fort Des Moines, Iowa, from Camp Travis, Capt. C. GILLASPIE, Boulder.

Connecticut

To Camp Benning, Ga., from Camp Polk, Lieut. E. K. DEVITT, Lyme.

The following order has been revoked: *To Camp Zachary Taylor, Ky.*, base hospital, from Camp McClellan, Capt. J. C. ROWLEY, Hartford.

District of Columbia

To Cape May, N. J., from Army Medical School, Lieut.-Col. W. H. ALLEN.

To Fort Sam Houston, Texas, base hospital, from Camp Sherman, Lieut. T. A. POOLE, Washington.

To New Cumberland, Pa., from Camp Knox, Major J. S. HOUGH, Washington.

To Walter Reed General Hospital, D. C., Major E. H. B. WEIDNER.

Florida

To Army Medical School, from Mays Landing, N. J., Capt. T. R. JONES, Tampa.

Georgia

To Fort McPherson, Ga., from Camp Logan, Lieut. C. M. WEST, Atlanta.
To Rockefeller Institute for instruction, and on completion *to Carlisle, Pa.*, from Camp Gordon, Major D. B. W. GRANT.
To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Capt. G. P. ROSS.

Idaho

To Fort Des Moines, Iowa, from Camp MacArthur, Lieut. J. R. YOUNG, Pocatello.

Illinois

To Azalea, N. C., from Fort Oglethorpe, Lieut. C. H. CONNOR, Chicago.
To Camp Grant, Ill., from Fort Riley, Lieut. J. I. MARTIN, Chicago.
To examine the command for nervous and mental diseases, from Camp Devens, Lieut. G. C. STIMPSON, Quincy.
To Camp Lewis, Wash., from Fort Riley, Lieuts. J. H. GAFF, D. F. O'CONNOR, I. S. SEGALL, Chicago.
To Camp Sherman, Ohio, base hospital, from Camp Wadsworth, Capt. C. M. McKENNA, Chicago.
To Camp Upton, N. Y., from Camp Crane, Lieut. G. P. GILL, Rockford.
To Camp Zachary Taylor, Ky., base hospital, from Camp Wadsworth, Capt. H. G. VAUGHAN, Oak Park.
To Chicago, Ill., from Camp Las Casas, Lieut. J. F. OATES, Chicago; from Fort Oglethorpe, Major R. W. WEBSTER, Chicago.
To Eastview, N. Y., from Camp Zachary Taylor, Lieuts. H. W. TRAUB, Chicago; F. E. KUNCE, Hopedale.
To Fort Benjamin Harrison, Ind., from Camp Greene, Capt. E. DE W. WISE, Champaign.
To Fort Sheridan, Ill., from Camp Crane, Lieut. P. B. GREENBERG, Chicago; from Camp Grant, Capt. B. HASELTINE, Chicago; from Camp Jackson, Lieut. E. J. BERKHEISER, Aurora; from Camp McClellan, Capt. S. ROSENBLATT, Chicago; from Camp Sevier, Lieut. S. P. BLIM, Crete; from Camp Sheridan, Lieut. M. F. McGUIRE, Chicago; from Camp Upton, Lieut. G. L. VENABLE, Chicago; from Camp Wadsworth, Lieut. M. J. KOSTRZEWSKI, Chicago; from Camp Zachary Taylor, Lieut. G. E. LYON, Decatur.
To Fort Snelling, Minn., from Fort Sheridan, Lieut. H. B. THOMAS, Chicago.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Custer, Mich.*, base hospital, from Camp Hancock, Capt. W. E. POTTER, Oak Park. On completion *to his proper station*, from Camp Sherman, Lieut. E. A. WELDEN, Wheaton; from Camp Dodge, Lieut. K. A. MEYER, Chicago.
To Washington, D. C., from Baltimore, Capt. O. H. MACLAY, Chicago.
To Williamsbridge, N. Y., from Fort Oglethorpe, Capt. W. H. GALLAND, Chicago.
The following order has been revoked: *To Fort Sheridan, Ill.*, from Fort Oglethorpe, Lieut. M. T. EASTON, Peoria.

Indiana

To Army Medical School, from Pittsburgh, Lieut. H. H. BOTTS, Colfax.
To Camp Grant, Ill., from Fort Riley, Lieut. O. L. BELCHER, Monroe City.
To Camp Lewis, Wash., from Fort Riley, Lieut. H. S. HIATT, Albion.
To Camp Sherman, Ohio, base hospital, from Madison Barracks, Capt. S. A. CLARK, South Bend.
To Eastview, N. Y., from Fort Oglethorpe, Lieuts. J. H. HARE, Logansport; W. S. COLEMAN, Rushville.
To Hoboken, N. J., from Camp Meade, Capt. D. V. McCLARY, Dale.
The following order has been revoked: *To Ft. McHenry, Md.*, for instruction from Fort Oglethorpe, Capt. A. A. THOMAS, Linton.

Iowa

To Camp Dodge, Iowa, base hospital, from Camp Lee, Capt. J. G. ROBERTS, Oskaloosa.
To Camp Grant, Ill., from Fort Riley, Capt. J. M. SMITTLE, Waucoma; Lieut. G. S. WESTLY, Manly.
To Camp Jackson, S. C., to examine the command for cardiovascular diseases, from Lakewood, Lieut. A. C. DAVIS, Iowa City.
To Camp Lewis, Wash., from Fort Riley, Capt. A. G. BYERS, Albia.
To Fort Des Moines, Iowa, from Camp Grant, Lieut. B. C. HAMILTON, Jr., Jefferson.
To Fort Douglas, Utah, from Camp Grant, Capt. I. E. NERVIG, Sioux City.

Kansas

To Fort Riley, from Camp Las Casas, Major J. DE W. RIDDELL, Salina. Base hospital, from Camp Devens, Capt. D. I. MAGGARD, Wichita.
To Lonoke, Ark., Eberts Field, from San Antonio, Lieut. W. S. FLEMING, Ness City.

Kentucky

To Azalea, N. C., from Fort Oglethorpe, Lieut. S. W. CROWE, Centertown.
To Camp Zachary Taylor, Ky., from Canal Zone, Lieut.-Col. A. T. McCORMACK, Bowling Green.
To Carlisle, Pa., from Camp Knox, Lieut. P. K. SAUER.
To Fort Sam Houston, Texas, base hospital, from Fort Oglethorpe, Lieut. F. E. MILLER, Covington.

Louisiana

To Colonia, N. J., from Camp Dix. Major K. W. NEY, New Orleans.
To Fort McPherson, Ga., from Camp McClellan, Lieut. R. C. VOSS, New Orleans.

Maine

To Army Medical School for instruction, from Camp McClellan, Lieut. W. E. CLARKE, Demariscotta Mills.

Maryland

To Camp Sevier, S. C., to examine the command for cardiovascular diseases, from Lakewood, Lieut. F. C. ELEDER, Baltimore.
To Fort Ontario, N. Y., from Camp Greene, Capt. A. M. STEVENS, Easton.
To Fort Snelling, Minn., from Cape May, Lieut. J. H. BAIRD, Baltimore.
To Hot Springs, N. C., from Camp Lee, Lieut. S. N. PILCHARD, Salisbury.
To the retired list, from Walter Reed General Hospital, Lieut. C. L. BAKER, Takoma Park.
To Washington, D. C., from Camp Shelby, Lieut. P. W. CHRISTMAN, Baltimore.

Massachusetts

To Army Medical School for instruction, from Camp Greene, Lieut. N. W. GILLESPIE, Boston; from Camp Hancock, Lieut. A. KLEIN, Boston; from Camp Sheridan, Lieut. J. M. GILCHRIST, Springfield.
To Camp Sevier, S. C., base hospital, from Camp Sherman, Capt. G. L. VOGEL, Boston.
To Detroit, Mich., from Fort Oglethorpe, Capt. H. F. DEARBORN, Lawrence.
To Fort Ontario, N. Y., Major R. J. R. CAINES, Boston; from Camp Greene, Lieut. C. F. SHARRY, Somerville.
To Fort Sam Houston, Texas, base hospital, from Camp Wheeler, Capt. H. B. OBER, Springfield.
To Fort Sill, Okla., base hospital, from Camp McClellan, Lieut. B. L. ASHMORE, Palmer.
To New Haven, Conn., from Fort Oglethorpe, Lieut. R. W. SHEEHY, Winchester.
To Washington, D. C., Surgeon-General's Office, from Walter Reed General Hosiptal, Major J. BRYANT, Boston.

Michigan

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. G. R. YOUNG, Detroit.
To Cape May, N. J., from New York City, Lieut. C. S. KENNEDY, Detroit.
To Detroit, Mich., from Camp Pike, Lieut. J. W. GORDON, Detroit.
To Fort Sheridan, Ill., from Camp Jackson, Lieut. I. E. BITTKER, Detroit; from Camp Pike, Lieut. H. R. LEIBINGER, Detroit.
To Hoboken, N. J., from Camp Crane, Capt. G. A. HOLLIDAY, Traverse City.
To New Haven, Conn., from Fort Oglethorpe, Lieut. L. P. SCHROEDER, Calumet.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Meade, Md.* base hospital, from Camp Zachary Taylor, Lieut. J. J. O'MEARA, Jackson.
To Walter Reed General Hospital, D. C., from Camp Meade, Capt. H. W. PLAGGEMEYER, Detroit.
The following order has been revoked: *To Walter Reed General Hospital, D. C.*, for instruction, from Fort Oglethorpe, Lieut. S. H. CRAIG, Detroit.

Minnesota

To Camp Grant, Ill., from Camp Lewis, Capt. H. A. BURNS, Minneapolis.
To Camp Lewis, Wash., from Fort Riley, Lieut. M. SHERPER, St. Paul.
To Cape May, N. J., from Rochester, Minn., Capt. A. W. SMITH.
To Colonia, N. J., from Rochester, Minn., Lieut.-Col. C. L. GANDY.
To Fort McHenry, Md., from Rochester, Minn., Major C. L. BEAVEN.
To Fort McPherson, Ga., from Rochester, Minn., Major W. E. HALL.
To Fort Snelling, Minn., from Camp Dodge, Lieut. C. A. TRAEGER, Faribault; from Camp Hancock, Lieut. G. McCREIGHT, Albert Lea; from Camp Las Casas, Capt. C. F. McNEVIN, St. Paul; from New York City; Capt. H. A. BEAUDOUX, St. Paul.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Fort Des Moines, Iowa*, from Camp Benning, J. R. McVAY, Rochester.
To San Francisco, Calif., Letterman General Hospital, from Rochester, Minn., Lieut.-Col. E. C. McCULLOCH.
To Walter Reed General Hospital, D. C., from Rochester, Minn., Lieut.-Cols. N. T. KIRK, L. J. OWEN.

Mississippi

To New Haven, Conn., from Fort Oglethorpe, Lieut. E. D. KEMP, High Point.
To Washington, D. C., from San Antonio, Major R. A. STRONG, Pass Christian.

Missouri

To Biltmore, N. C., from Fort Oglethorpe, Capt. C. R. BUREN, Princeton.
To Camp Grant, Ill., from Fort Riley, Lieuts. T. H. EGBERT, Kennett; C. H. BULKLEY, La Plata.
To East Norfolk, Mass., from Camp Greene, Capt. A. G. WICHMANN, St. Louis.
To Fort Des Moines, Iowa, from Camp Upton, Lieut. N. ROSENBERG, Kansas City.
To Fort Leavenworth, Kan., from Fort Oglethorpe, Major W. L. McBRIDE, Kansas City.
To Lonoke, Ark., Eberts Field, from St. Louis, Capt. J. J. BURDICK, St. Louis.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Meade, Md.*, base hospital, from Camp Zachary Taylor, Capts. J. M. DEAN, J. C. DONAHUE, St. Louis.
To Williamsbrdige, N. Y., from Camp Meade, Capt. V. B. KIEFFER, St. Louis.

Nebraska

To Camp Lewis, Wash., from Camp Jackson, Major E. S. TENNEY, Lincoln; from Fort Riley, Major A. E. WESTERVELT, Craig.
To Fort Des Moines, Iowa, from Camp Zachary Taylor, Lieut. L. K. STRATE, Hastings.
To Fort Snelling, Minn., from Camp Dodge, Lieut R. L. IVINS, Crawford.

New Hampshire

To Army Medical School for instruction, from Camp McClellan, Lieut. H. E. POWERS, Manchester.
To Boston, Mass., from Camp McClellan, Capt. F. S. FOSTER, Manchester.
To Camp Devens, Mass., from Camp Las Casas, Lieut. P. A. PION, Concord.

New Jersey

To Camp Devens, Mass., as orthopedic surgeon, from Boston, Lieut. D. A. CURTIS, Paterson.
To Camp Sherman, Ohio, base hospital, from Camp Wadsworth, Lieut. H. B. EPSTEIN, Newark.

To Eastview, N. Y., from Fort Oglethorpe, Lieut. O. A. MOCKRIDGE, Newark.
To New Haven, Conn., from Fort Oglethorpe, Capt. G. L. COOK, Penns Grove.
To Newport News, Va., from Lakewood, Major T. D. HURLEY.
To Washington, D. C., Surgeon-General's Office, from Camp Dix, Col. C. C. McCULLOCH, JR.; from Hoboken, Lieut.-Col. R. F. METCALFE.
The following order has been revokel: *To Boston, Mass.*, from Fort Oglethorpe, Capt. J. N. RYAN, Passaic.

New York

To Army Medical School, from Camp Meigs, Lieut. R. S. McBIRNEY, Glen Cove. For instruction, from Camp Hancock, Lieut. J. B. L'EPISCOPO, Brooklyn; from Camp Logan, Lieut. J. W. SMITH, Brooklyn; from Camp MacArthur, Lieut. C. GOLDMAN, Brooklyn; from Camp Travis, Capt. D. C. PATERSON, Yonkers; from Fort Oglethorpe, Lieut. C. A. WISCH, Niagara Falls.
To Biltmore, N. C., from Fort Oglethorpe, Lieut. R. S. BREAKEY, Monticello.
To Camp A. A. Humphreys, Va., base hospital, from Fort Oglethorpe, Lieut. A. B. FERGUSON, New York.
To Camp Abraham Eustis, Va., to examine the command for cardiovascular diseases from Lakewood, Lieut. G. C. DORSEY, New York.
To Camp Sevier, S. C., to examine the command for cardiovascular diseases, from Lakewood, Lieut. M. A. McIVER, New York.
To Camp Shelby, Miss., to examine the command for cardiovascular diseases, from Camp Abraham Eustis, Lieut. R. A. CORBIN, New York.
To Colonia, N. J., from Camp Shelby, Lieut. E. E. VAN DERWERKER, New York; from Camp Sheridan, Lieut. L. FASKE, Brooklyn.
To Eastview, N. Y., from New Haven, Lieut. I. E. LISS, New York.
To Erie Proving Ground, Ohio, as sanitary inspector, from Fort Oglethorpe, Capt. J. E. THOMPSON, Brooklyn.
To Fort Benjamin Harrison, Ind., from Camp Sherman, Lieut. J. G. MORRISSEY, Yonkers.
To Fort Oglethorpe, from Camp Crane, Lieut. J. J. FINIGAN, Lyons.
To Garden City, N. Y., from Rochester, N. Y., Lieut. H. A. MILLER, Rochester.
To Hoboken, N. J., from Camp Crane, Capt. J. J. COTTER, New York; from Camp Lee, Lieut. F. B. RING, Brooklyn; from Camp Sherman, Lieut. H. J. FEASTER, Brooklyn; from Fort Oglethorpe, Capt. W. N. MALONEY, Three Mile Bay.
To Long Beach, N. Y., from Camp Wadsworth, Lieut. S. O. SHUMWAY, Brooklyn.
To Mineola, N. Y., from Camp Dick, Capt. J. D. GULICK, Schenectady.
To New Haven, Conn., from Fort Oglethorpe, Capt. A. H. MOORE, New Rochelle; Lieuts. R. M. PALMER, Gloversville; L. ROSEN, New York.
To Rockefeller Institute for instruction, and on completion *to his proper station*, from Camp Dodge, Lieut. G. B. BROWN, Saratoga Springs; from Camp Upton, Lieut.-Col. L. R. POUST.
The following orders have been revoked: *To Camp Crane, Pa.*, Lieut. L. J. BUTLER, Albany. *To Camp Grant, Ill.*, from Fort Oglethorpe, Lieut. M. F. HALL, Elmira. *To Camp Meade, Md.*, base hospital, from Fort Oglethorpe, Capt. J. R. GRANT, Cincinnatus. *To Fort McPherson, Ga.*, from Camp Crane, Lieut. J. L. KINNER, Elmira.

North Carolina

To East Norfolk, Mass., from Hoboken, Lieut. A. S. OLIVER, Greensboro.

North Dakota

To Azalea, N. C., from Fort Oglethorpe, Lieut. H. A. BRANDES, Hebron.
To Camp Grant, Ill., from Fort Riley, Lieut. C. A. PLATOU, Litchville.

Ohio

To Biltmore, N. C., from Fort Oglethorpe, Lieut. H. J. AUSTIN, Geneva.
To Camp Sheridan, Ala., base hospital, from Camp Sevier, Lieut. W. B. GOFF, Cleveland.
To Camp Upton, N. Y., base hospital, from Madison Barracks, Major H. M. OSBORNE, Youngstown.
To Detroit, Mich., from Camp Zachary Taylor, Lieut. J. H. CHALAT, Cleveland.
To Long Beach, N. Y., from Camp Zachary Taylor, Lieut. M. C. HOUSTON, Urbana.
To New Haven, Conn., from Fort Oglethorpe, Lieut. F. E. ROSNAGLE, London.
To Newport News, Va., from Camp Sherman, Lieut.-Col. J. L. ROBINSON; from Walter Reed General Hospital, Major D. M. ROBERTS, New Richmond.
To Philadelphia, Pa., from Carlisle, Major A. C. BACHMEYER, Cincinnati.
To Williamsbridge, N. Y., from Fort Oglethorpe, Capt. A. W. WHEELER, Toledo.
The following order has been revoked: *To Camp Wheeler, Ga.*, base hospital, from Fort Oglethorpe, Lieut. F. W. DIXON, National Military Home.

Oklahoma

To Camp Grant, Ill., from Fargo, N. D., Lieut. E. F. GARLINGTON, Far River.
To Camp Shelby, Miss., as assistant to the camp surgeon, from Camp Polk, Major W. E. HARRINGTON, Wakita.
To Hoboken, N. J., from Camp Polk, Capt. J. H. STOLPER, Muskogee.
To West Baden, Ind., from Camp Zachary Taylor, Lieut. E. L. YEAKEL, Oklahoma City.

Pennsylvania

To Biltmore, N. C., from Fort Oglethorpe, Lieut. M. B. BERNARD, Philadelphia.
To Camp Dix, N. J., from Camp Las Casas, Major C. H. SMITH, Uniontown.
To Camp Grant, Ill., from Lakewood, Lieut. J. L. ARNOLD, Harrisburg.
To Colonia, N. J., from Philadelphia, Col. A. P. C. ASHURST, Philadelphia.
To Detroit, Mich., from Camp Greene, Major P. A. SHEAFF, Philadelphia.
To Fort Oglethorpe, from Camp Crane, Lieut.-Col. R. SLEE, Swiftwater.
To Fort Ontario, N. Y., from Edgewood, Lieut. T. F. ERDMAN, Reading.
To Fort Sam Houston, Texas, base hospital, from Camp Hancock, Capt. J. S. KELSEY, Pittsburgh.
To Hoboken, N. J., from Camp Crane, Capt. J. J. DONOHUE, Frackville.
To Long Beach, N. Y., from Camp Zachary Taylor, Lieut. H. C. GRIM, Trumbaursville.
To Middletown, Pa., from Camp Meade, Capt. O. G. LEWIS, Washington.
To New Haven, Conn., from Fort Oglethorpe, Lieuts. N. H. JENKINS, Kingston; B. A. McDERMOTT, G. J. SILVERMAN, Philadelphia; T. F. MOORE, Pittsburgh.
To Pittsburgh, Pa., from Camp Meade, Lieut. E. S. WEIMER, Pittsburgh.
To Washington, D. C., Surgeon-General's Office, from Fort Oglethorpe, Lieut. L. L. ROGERS, Kingston.
To Waynesville, N. C., from Fort Oglethorpe, Lieut. J. A. BAER, Honesdale.
The following orders have been revoked: *To Camp Dix, N. J.*, from Fort Oglethorpe, Lieut. A. S. CANTOR, Dickson City. *To Chicago, Ill.*, from Camp Crane, Lieut. C. B. LAMP, Seminole. *To East View, N. Y.*, from Fort Oglethorpe, Lieut. J. C. DEAL, Philadelphia.

Philippine Islands

To San Francisco, Calif., from Philippine Department, Major H. L. FREELAND, Manila.

Porto Rico

To Henry Barracks, P. R., from Camp Las Casas, Capt. A. C. SMITH, Cayey.

South Carolina

To Washington, D. C., from Charleston, Col. H. P. BIRMINGHAM. On completion *to Camp Greene, N. C.*, from Fort Oglethorpe, Capt. L. A. RISER, Columbia.

Texas

To Camp Grant, Ill., from Fort Riley, Lieut. W. P. DINGLE, Valley Mills.
To Camp Lewis, Wash., from Fort Riley, Lieut. J. J. JOHNSON, San Antonio.
To Camp MacArthur, Texas, base hospital, from Camp Dodge, Lieut. H. G. NEWSON, Dallas.
To New Haven, Conn., from Fort Oglethorpe, Lieut. C. W. WELLER, Austin.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to his proper station*, from Camp Sherman, Lieut. M. S. SEELY, Wortham.
The following orders have been revoked: *To Camp Custer, Mich.*, base hospital, from Fort Oglethorpe, Capt. H. M. BUSH, San Antonio. *To Camp Kearney, Calif.*, base hospital, from Fort Oglethorpe, Lieut. J. R. ELLIOTT, Palacica.

Vermont

To Camp Shelby, Miss., base hospital, from Camp Wheeler, Lieut. L. M. KELLEY, Manchester Center.

Virginia

To Detroit, Mich., from Camp Greene, Lieut. F. H. SMITH, Abingdon.
To Richmond, Va., from Camp Travis, Lieut. W. I. LAUGHON, Bedford.
To Walter Reed General Hospital, D. C., for instruction, from Camp Lee, Capt. C. M. EDWARDS, Richmond.

Washington

To Camp Lewis, Wash., from Fort Riley, Lieut. H. F. THIEL, Creston.

West Virginia

To Army Medical School, for instruction, from Camp Grant, Lieut. L. E. DAUGHERTY, Davis.
To Biltmore, N. C., from Fort Oglethorpe, Lieut. J. A. BAKER, Shirley.
To Camp Lee, Va., base hospital, from Edgewood, Lieut. E. B. HENSON, Charleston.
To New Haven, Conn., from Fort Oglethorpe, Lieut. H. E. DAVIS, Switzer.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to his proper station*, from Camp Dix, Capt. W. L. VAN SANT, Hinton.

Wisconsin

To Fort Sheridan, Ill., from Camp Hancock, Capt. E. L. BOLTON, Chilton; from Camp MacArthur, Lieut. J. D. GILLIS, Wawatosa.
To San Francisco, Calif., Letterman General Hospital, from Jefferson Barracks, Capt. G. H. LAWRENCE, Fond du Lac.

Wyoming

To Fort Ontario, N. Y., from Fort Riley, Capt. J. P. MARKLEY, Laramie.

UNITED STATES PUBLIC HEALTH SERVICE

Asst. Surg.-General A. J. McLAUGHLIN, proceed to Raleigh, N. C., and necessary points in the states of North Carolina, South Carolina, Alabama and Georgia for inspection of the work in extracantonment sanitation.
Surgeon J. W. KERR, proceed to Austin and other places in the state of Texas for study of public health conditions.
Surgeon B. J. LLOYD, relieved from duty in the 13th Naval District, resume duty at Seattle, Wash.
Surgeon EDWARD FRANCIS, report to director of the hygienic laboratory for temporary duty in connection with the investigation of the value of antipneumococcus vaccine.
Surgeon E. A. SWEET, report to director of the hygienic laboratory for temporary duty in connection with the investigation of the value of antipneumococcus vaccine.
Surgeon M. C. GUTHRIE, proceed to Southport, N. C., and assume temporary charge of Service activities at that port.

Passed Asst. Surg. C. L. WILLIAMS, proceed to Columbus, Ga., and assume temporary charge.

Passed Asst. Surg. H. C. CODY, relieved at New London, Conn., proceed to Washington, D. C., for duty in epidemiological studies of influenza.

Passed Asst. Surg. G. A. KEMPF, proceed to Washington, D. C., for temporary duty in connection with epidemiological studies of influenza.

Asst. Surg. P. D. MOSSMAN, relieved at Pensacola, Fla., proceed to Seattle, Wash., for duty.

Prof. B. B. PHELPS, proceed to Syracuse, N. Y., for duty in investigations of reconstructed milk.

Acting Asst. Surg. W. E. REASNER, proceed to Leavenworth, Kan., for duty in extracantonment sanitation.

San. Engr. C. N. HARRUB, relieved at Jacksonville, Fla., proceed to Washington, D. C., for preparation of report on pollution of coastal waters.

San. Engr. A. F. STEPHENSON, proceed to Syracuse, N. Y., for duty in investigations of reconstructed milk.

San. Engr. H. W. STREETER, report at Washington, D. C., for duty in connection with investigations of influenza and stream pollution.

San. Engr. R. B. TARBETT, proceed to Sulphur River, La., to report on supply of gas for fuel for city of Little Rock, Ark.

Scientific Asst. G. S. BOTE, relieved at Fort Worth, Texas, proceed to Fayetteville, N. C., for duty in extracantonment sanitation.

Scientific Asst. HIRAM BYRD, proceed to New York City for inspection of venereal disease clinic at the Skin and Cancer Hospital.

Scientific Asst. FORREST E. DEEDS, relieved at Fort Worth, Texas, proceed to Washington, D. C., for temporary duty; thence to Chicago for duty under the division of industrial hygiene and medicine.

Scientific Asst. LOUISE C. EISENHARDT, proceed to Waterbury, Conn., for duty in connection with field investigations of industrial fatigue.

Scientific Asst. C. G. HOBART, proceed to Chicago for duty under division of industrial hygiene and medicine.

Scientific Asst. J. T. JAMIESON, proceed to New York City for duty under division of industrial hygiene and medicine.

Scientific Asst. CARLOS I. REED, proceed to Chicago for duty in field investigations of industrial hygiene.

Scientific Asst. EDGAR D. THOMPSON, proceed to Chillicothe, Ohio, for duty in venereal disease clinic.

Public Health Statistician EDGAR SYDENSTRICKER, directed to supervise statistical work in connection with studies of pellagra, industrial hygiene and influenza at Washington, D. C.

Biochemist M. X. SULLIVAN, represent the Service at meeting of home demonstration agents of South Carolina at Winthrop College, Rock Hill, S. C.

Consulting Hygienist R. P. ALBAUGH, proceed to New York City for duty under division of industrial hygiene and medicine.

Consulting Hygienist E. B. STARR, proceed to Washington, D. C., preliminary to special investigations under the division of industrial hygiene and medicine at East St. Louis, Ill.

Lecturer LEE A. STONE, proceed to Nashville, Tenn., for conference relative to legislation for venereal disease control.

San Insp. J. H. ERVIN, proceed to Newport News, Va., for duty in connection with extracantonment sanitation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

School Taken Over as Hospital.—Naval Officers at Mare Island arranged, January 13, to take over St. Vincent's Catholic School, Vallejo, and operate a hospital for influenza patients in these buildings.

Board of Health Resigns.—The board of health of Fresno resigned, January 3, following the failure of the city council to pass an ordinance providing for the complete closing of all places of amusement, churches and saloons as a measure to check the spread of influenza.

Work Against Tuberculosis.—The attitude of the public toward tuberculosis has changed materially since 1914, when an appropriation of $150,000 for the construction of sanatoriums failed to pass legislature. At present counties have provided special hospitals at the cost of $1,646,000 for the work against tuberculosis, and there are now fifteen subsidized hospitals either in operation or in process of construction.

Personal.—Dr. Thurlow S. Miller, San Francisco, was struck by an automobile while crossing a street, January 2, and sustained painful injuries.——Dr. Henry C. Bush, Colfax, has been appointed superintendent of the Arroyo Sanatorium, Tuberculosis Hospital of Alameda County at Livermore, to succeed Dr. Guy F. Rogers, who has resigned.——Dr. J. Severy Hibben has been appointed health officer and city physician of Pasadena, to succeed Dr. Stanley P. Black.

Medical Lectures.—Stanford University Medical School has commenced its thirty-seventh course of popular medical lectures to be held in Lane Hall, every Friday evening. The chief subject of the lectures is "Lessons of the Great War." The special subjects are: "The Rehabilitation and Reeducation of the Wounded and Injured," Mr. A. J. Pillsbury, Sr.; "What the War Has Taught Us in Regard to the Food Supply of the People," Prof. M. Jaffa; "What the War Has Taught Us in Regard to the Control of Venereal Diseases," Dr. Lewis Michelson; "What the War Has Taught Us in Regard to the Physical Condition of Our Young Men," Dr. Philip Hale Pierson; "The Children's Year; a Reconstruction Program," Dr. Adelaide Brown, and "The Control of Epidemics," Dr. William C. Hassler.

ILLINOIS

Personal.—Dr. Fred M. F. Meixner has been appointed commissioner of health of Peoria, to succeed Dr. George Parker, who has resigned.——Dr. Walter Wilhelmj has been elected chairman of the social hygiene clinic of East St. Louis.

Gastro-Enteritis Outbreak.—January 5, the commissioner of health of Peoria reported a fresh outbreak of gastro-enteritis presumably due to water infection. The board of health assisted by the state department of health is endeavoring to locate the source of infection. There are from 2,000 to 3,000 cases reported in the city.

New Officers.—At the annual meeting of the St. Clair County Medical Society, held at Belleville, January 9, Dr. Walter Wilhemj, East St. Louis, was elected president; Dr. John C. Gunn, Belleville, vice president; Dr. Charles W. Lillie, East St. Louis, secretary, and Dr. Adolph E. Hansing, Belleville, was reappointed treasurer for the twentieth consecutive term.

Chicago

Honor for Occupational Therapist.—Mrs. Eleanor Slagle of the Henry Favill School of Occupational Therapy, has been appointed supervisor of aids in occupational therapy in the Medical Department of the United States Army.

Personal.—Albert E. Halstead, lieutenant-colonel, M. C., U. S. Army, is on his way home from France.——Franklin H. Martin, colonel, M. C., U. S. Army, who went abroad, November 9, reached New York, January 16, ill with bronchitis.——Leonard S. Wood, major-general, M. C., U. S. Army, has assumed command of the central department, succeeding Thomas H. Barry, major-general, U. S. Army.——Julius H. Hess, major, M. C., U. S. Army, received his discharge, December 25, as chief of the medical service of General Hospital No. 25, Fort Benjamin Harrison, Ind.

MARYLAND

Meetings.—A meeting arranged under the joint auspices of the Baltimore City Medical Society and the Red Cross Institute for the Blind was held at Osler Hall, in the Medical and Chirurgical Faculty Building, Baltimore, January 17, when Sir Arthur Pearson, the founder and director of St. Dunstan's Hostel, London, spoke on "What Is Being Done for Soldiers and Sailors Blinded in the World War at St. Dunstan's." Lieut.-Col. James Bordley, Baltimore, director of America's work for blinded soldiers, sailors and marines, told what was being done at Evergreen (U. S. Army General Hospital No. 7) and at the Red Cross Institute for the Blind in Baltimore.

Personal.—Col. Hugh Hampton Young, Major Louis C. Lehr, Washington, D. C., and Major William A. Fisher, Baltimore, are scheduled to arrive at New York aboard the *Caronia*, January 26.——Dr. Arthur Woo, chairman of the Chinese Christian Movement in Great Britain, who is at present studying at the Johns Hopkins Hospital and Medical School, gave an address at Brown Memorial Church, Baltimore. Dr. Woo was brought to this country by the Rockefeller Foundation for the purpose of studying American medical and hospital methods. Later he will visit the Mayo Clinic and finally head the medical staff at the Union Medical College at Pekin, China.——Dr. Francis X. Kearney, Baltimore, has been made superintendent of Mercy Hospital, to succeed Dr. Edward P. Smith, who resigned to enter military service.

Influenza Increasing.—More than 18,000 cases of influenza have been reported to the state board of health since January 1, but comparatively few fatalities have resulted. Because of new cases in Anne Arundel County, a number of schools in the rural section have been closed by the superintendent of education until conditions show improvement. In Montgomery County the chairman of the Red Cross chapter has asked the various Red Cross organizations to devote themselves to relieving the distress caused by the epidemic now prevailing. The idea is that each organization name a com-

mittee to take charge of the work in its locality and use funds it has available. Assistance has been sent on request to Somerset County, lower Dorchester County and Frederick County where the disease has been most prevalent, so far as the state is concerned. Two hundred and fifty-one cases were reported for Baltimore and 275 in the counties recently during a twenty-four hour period. The situation in the city was discussed at a conference Health Commissioner Blake had with the heads of the divisions constituting his department. It was shown that no section of town is free from the disease, but it is of a much milder type than heretofore. Since the beginning of the epidemic last September, 66,350 cases have been recorded at the office of the state board of health, and 22,752 at the local department, or approximately 90,000 for the city and counties.

MAINE

Tuberculosis Drive Opens.—January 6, the first day of the drive for membership campaign of the Androscoggin Anti-Tuberculosis Association, Lewiston, $5,000 was received.

Society Meeting.—At the ninety-fifth quarterly meeting of the York County Medical Society, held in Biddeford, January 2, Dr. Ansel S. Davis, Springvale, was elected president; Dr. Frank W. Smith, York Village, vice president; Dr. A. Leon Jones, Old Orchard, secretary, and Dr. Charles F. Traynor, Biddeford, treasurer.

Committee on Cancer Control.—Dr. Leverett D. Bristol, Augusta, state commissioner of health and chairman of the Maine committee for the control of cancer, has named the following physicians as members of the committee: Alfred D. Sawyer, Fort Fairfield; Donald B. Cragin, Waterville; Eugene B. Sanger, Bangor; Wallace E. Webber, Lewiston; George H. Coombs, Waldoboro; Walter E. Tobie, Portland, and Walter N. Miner, Calais. Through the chairmanship of Health Commissioner Bristol the cancer control work of the committee will be directly identified with the state health department.

MICHIGAN

State Health Association Organized.—Health officers of the state met in Lansing, January 7, and organized the Michigan Health Association, and elected Dr. Alvin H. Rockwell, Kalamazoo, president; C. Parnell, Ann Arbor, vice president, and Dr. William DeKleine, Flint, secretary.

New Health Magazine.—The first number of *Michigan Out-of-Doors* has just been issued by the Michigan Anti-Tuberculosis Association, taking the place of the bulletin of the association. It is published in the interests of the anti-tuberculosis campaign in the state.

Health Budget.—The tentative budget of the department of health for the year totals $2,480,000. This includes the sums needed for additions to a number of contagious disease units, rearrangements and changes in buildings of the Herman Keifer Group, new units required for treatment of pneumonia and venereal disease, $200,000 for extension of the hospital power plant, and the instalment of a new and better hospital laundry and administration offices, $150,000 for a smallpox hospital, $300,000 for a new maternity hospital, and $5,000 for a new department of health building.

Personal.—Dr. Albert T. Getchell, Mount Pleasant, was seriously injured in a collision between automobiles, January 5.——Dr. Garner M. Byington, Charlotte, has been placed in charge of the social disease section of the state board of health service.——Capt. Henry F. Vaughan, S. C., U. S. Army, has been recalled from military service, presumably to succeed Dr. James W. Inches as health commissioner of Detroit. Dr. Inches became police surgeon of the city, January 15.——Dr. Stephen C. Mason has been appointed health officer of Menominee, to succeed Dr. Robert G. Marriner, deceased.

MINNESOTA

Honor Veteran Members.—At the annual meeting of the Southern Minnesota Medical Association, held in Mankato, January 20, the exercises of the session were inaugurated by an honorary recognition by the association of two of its veteran members, Drs. John H. James, Mankato, and George F. Merritt, St. Peter.

Personal.—Dr. W. B. Wright, assistant superintendent of the St. Paul City and County Hospital, resigned, January 9. ——At the annual meeting of the Clay-Becker Tuberculosis Commission, held at Sand Beach Sanatorium, near Lake Park, January 9, Dr. Olaf J. Hagan, Moorhead, was reelected president, and Dr. Oesten K. Windberg, Lake Park, vice president.——Dr. Ignatius J. Murphy, St. Paul, for three years executive secretary of the Minnesota Public Health Association, has resigned to take up postgraduate work in Boston.——Dr. Ernest E. Wells, Stillwater, has succeeded Dr. Charles Van Cappellen, Stillwater, as county physician and poor commissioner of Washington County.

NEW JERSEY

Health Department Activities in Newark in 1918.—According to the monthly bulletin of the department of health of Newark the new activities of the department during 1918 included the establishment of a bureau of venereal diseases, a drug addict clinic in the city dispensary, extension of the free dental clinic in the dispensary, a school of instruction for department employees, supervision of cattle slaughtering by department veterinarians, a clean-up campaign, the registration of midwives, the muzzling of dogs and the control of a typhoid fever outbreak at the Boys' Home at Verona.

NEW YORK

Election.—At the annual meeting of the Canandaigua Society for Physicians and Surgeons, January 9, Dr. William A. Bing was elected president. Dr. Harry M. Smith, vice president, and Dr. George W. Gregg, secretary-treasurer.

Dr. Bernstein Exonerated.—The committee appointed by the state board of charities to investigate a complaint made by the Utica Trades Association on conditions said to exist in the Rome State Custodial Asylum has reported that "As no testimony to substantiate the general or specific charge of the complaint has been made, the committee is of the unanimous opinion that the charges are not sustained and Dr. Charles Bernstein of the Rome State Custodial Asylum has been completely exonerated."

Governor Would Abolish Drug Control Board.—Governor Smith has asked the legislature to immediately abolish the State Narcotic Drug Control Commission as an unnecessary bureau entailing unnecessary expense to the state. In a special message to the law makers the governor suggests that the work of the commission should be taken over by a bureau to be created in the state department of health. Governor Smith expresses himself as in sympathy with the purposes of the antinarcotic drug law and believes that the state should provide for the regulation and control of the sale of narcotic drugs.

School Diet Kitchens in the Influenza Epidemic.—In Syracuse, at the instigation of Dr. Frederick W. Sears, state sanitary supervisor of the district, the diet kitchens of many of the schools, which were not then in operation, were made use of to cook meals for families totally disabled during the recent influenza epidemic. The food was distributed by automobile. The work was financed by the Red Cross and was carried out through the cooperation of the supervisor, the Red Cross, the superintendent of the schools and the director of school diet kitchens. A total of 16,982 meals were served during the first week at a cost of $847.82, a per capita cost of only 4 cents. Later as the patients began to need more substantial food the cost increased.

Personal.—Dr. Francis E. Fronczak, major, M. C., U. S. Army, and formerly health commisioner of Buffalo, is expected to be temporary representative of Poland at the first peace conference at Versailles, January 18, pending the arrival of the Polish delegate proper.——Dr. Harry C. Hummell, Rochester, for several years health officer of Irondequoit, has resigned. The town board of Irondequoit gave a dinner, January 9, in his honor and presented him with a silver loving cup.——Dr. Paul D. Taddiken, Ogdensburg, has been appointed medical superintendent for the Buffalo State Hospital for the Insane, to succeed Dr. George W. Gorrill, deceased. Dr. Taddiken's place as superintendent of the St. Lawrence State Hospital has been filled by the returning of Dr. Richard H. Hutchings, Ogdensburg, who was superintendent until he resigned to enter the military service.——Dr. Frank Crowther, Schenectady, has been elected a member of the Congress in the Thirtieth Congressional District.——Dr. Walter B. Jennings, Norwich, has been offered a position in the State Hospital, Trenton, N. J.

Drastic Prohibition Bill.—A bill enforcing prohibition in New York state in ratification of the federal amendment has been prepared for introduction into the legislature. Very stringent regulations are laid down in connection with the sale of alcohol and wine by druggists. No sales will be made for medicinal purposes except on a physician's prescription and an affidavit would be required of all persons purchasing for mechanical, chemical or sacramental purposes.

A pharmacist's license to sell alcohol would be issued only to druggists who have never been convicted of illegal sale of liquor, whose stock of alcohol shall not represent more than 1 per cent. of the value of all the goods in his place of business and who himself is not addicted to the use of alcohol or drugs. The sale of toilet, culinary, medicinal, antiseptic and flavoring extracts and patent medicines, the manufacture of which requires the payment of a United States liquor dealer's tax would be prohibited. No one but a licensed druggist would be permitted to sell certain compounds and patent medicines named in the bill except on the prescription of a licensed physician. Physicians would be required to keep a record of all prescriptions issued by them for alcoholic compounds and the medical practitioners allowed to issue such prescriptions would first have to give bond of $2,000 for observing the provisions of the law and be licensed by the prohibition commissioner.

New York City

Personal.—Dr. Harold M. Hayes has returned from active service in France and has resumed his practice in this city. ——Dr. Frederick W. Splint has been appointed superintendent of the Binghamton City Hospital.——Dr. Bruno S. Horowicz has been appointed assistant sanitary superintendent in the department of health.

United Hospital Fund.—At the annual meeting of the United Hospital Fund, which collects funds for distribution among forty hospitals of the city which give free treatment to the poor, the treasurer announced that the receipts for the fiscal year just ended were $183,778, a gain of 36 per cent. over the previous year. Attention is called to the fact that war conditions as well as the influenza epidemic have seriously increased the demands made on the hospitals, and that in order to meet these demands it will be necessary to raise $250,000 during the present year. Of 151,655 patients treated in the united hospitals last year 48 per cent. did not pay a cent.; 30 per cent. paid in part, and 22 per cent. were private patients. Dr. George E. Brewer, W. V. S., Thorne and James McVickar Breed were elected trustees of the fund.

Accuse Mayor of Bringing Politics Into Health Department.—The Central Federated Union accused Mayor Hylan of renewing his attempt to throw the department of health into politics. At a recent meeting of this organization resolutions were adopted protesting to Health Commissioner Dr. Royal S. Copeland against what was termed his "secret and surreptitious" removal of the division of industrial hygiene, of which Dr. Louis I. Harris was the director, from the bureau of preventable diseases, to his own office. The federated union in the resolutions adopted complains against the disturbance of the work of the division of industrial hygiene, "as constituting a danger, not only to workers, but to the community as a whole," and asks that a committee of five be appointed to take such action as may be necessary, jointly with other central bodies, to exert every effort to prevent this unfavorable interference with an official who has won the confidence and respect of all those interested in health protection of the public. Dr. Copeland declares that no powers will be taken from Dr. Harris, but that Dr. Harris's work has been very onerous aside from the work of the division of industrial hygiene and that he considered the work of this division so important that he wished to have it directly under his supervision. He asserts that Mayor Hylan has had nothing to do with the change. In reply to the complaint of the federated union that its representatives were not consulted by the health commissioner in making the change, Dr. Copeland states that there is no reason why he should consult with them as the work he has in view is work that has not been done before. He is planning to go into industrial establishments, examine the heating, lighting and ventilation, see that sanitary arrangements are satisfactory and investigate the conditions in the handling of food.

OHIO

Influenza at the Orphanage.—Every one of the 156 boys and girls at the orphanage at Fairmount had influenza during the epidemic, but all recovered. There has not been a death in the home from any cause for two and a half years. The institution was closed for three months to visitors during the epidemic.

Governor Recommends Health Organization Changes.—Governor Cox, in his recent inaugural address, recommended that the state be divided into sanitary districts with experienced full-time men in charge of the districts. The governor believed that with this arrangement it would have been easier to manage the epidemic of influenza. In this Dr. William H. Peters, health officer of Cincinnati, agrees. At present there are about 2,200 health officials in the state, many of whom are not physicians and know nothing of sanitation.

OKLAHOMA

Personal.—Dr. Fred S. Clinton, Tulsa, was elected a director of the Oklahoma State Historical Society at its meeting in Oklahoma City, January 14.

Hospital for Negroes.—Possession of the Williams Building, Tulsa, which is to be used as a hospital for colored people, was obtained, January 14, and the institution will be opened this week to receive patients.

New Officers.—At the annual meeting of the Grady County Medical Association, held at Chickasha, December 11, Dr. Martha J. Bledsoe was elected president; Dr. Udonna C. Boon, vice president; Dr. Joe C. Ambrister, secretary-treasurer, all of Chickasha.

Antituberculosis Society Needs Aid.—The Tulsa Anti-Tuberculosis Society is already handling forty-three cases of tuberculosis and its estimated expenses for the current year are not less than $13,000. It is, therefore, making plans to ask the state legislature for an appropriation of not less than $10,000 to help in the local situation in addition to financing the proposed sanatoriums to be built by the state.

SOUTH CAROLINA

Ward for Negroes at State Sanatorium.—The state board of health has decided to ask the legislature for a ward for negroes to be erected on the grounds of the South Carolina Sanatorium, Columbia. The sanatorium is under the charge of Dr. Ernest Cooper, Columbia, as resident superintendent, and the resident physician is Dr. Wilfred R. Claytor.

SOUTH DAKOTA

Smallpox at Huron.—Dr. Charles H. Hall, vice president of the board of health, announces that there are six persons in Huron ill with smallpox. All the cases are under quarantine and are mild in degree.

New Officers.—At the annual meeting of the Sioux Falls District Medical Society, held in Sioux Falls, January 7, Dr. John B. Eagan, Dell Rapids, was elected president; Dr. William E. Donahoe, Sioux Falls, vice president, and Dr. Samuel A. Keller, Sioux Falls, secretary-treasurer.

Personal.—Dr. Henry B. Noble, Howard, has retired from practice.——Dr. Andreas A. Wipf, Freeman, formerly a member of the state legislature and a practitioner for twenty-five years, has retired on account of ill health.——Dr. Louis Holtz has resigned as city health officer of Aberdeen and will devote his attention to private practice and to laboratory work.

PENNSYLVANIA

Personal.—Dr. Arthur M. Calvert, formerly of the Cincinnati Tuberculosis Sanatorium, was made superintendent of the Grand View Sanatorium, Oil City, Pa., January 1.—— Dr. Clarence R. Phillips has been elected chairman of the mental clinic, Harrisburg, and the following physicians were elected members of the board of directors: Drs. Norman B. Shepler and Clarence R. Phillips.

New Officers.—The Physicians' Protective Association of Easton held its annual meeting, January 7, and elected the following officers: president, Dr. Oscar M. Richards; vice presidents, Drs. Rueben S. Raub and Joseph S. Cohen, and secretary-treasurer, Dr. W. Gilbert Tillman.——York County Medical Society at its annual meeting, January 2, elected the following officers: president, Dr. John Gilbert, York; vice presidents, Drs. G. Elmer Krout, Jacobus, and Gladfelter E. Spotz, York; secretary, Dr. Nathan C. Wallace, Dover, and treasurer, Dr. Charles W. Eisenhower, York.

Philadelphia

Personal—John Dean Elliott, major, M. C., U. S. Army, is on his way home after nearly a year of overseas service. ——Drs. Otto P. Borger and Samuel L. Immerman have been made assistant school medical inspectors by the director of the health department.

Hospital Lease Ready.—The lease of two wings of the Philadelphia General Hospital to the government for the care and treatment of wounded and sick soldiers, which was authorized by an ordinance that passed councils, January 17, was forwarded to Washington to receive the signature of Secretary Baker. The rental consideration is $1 a year

Medical Club Election.—The Medical Club of Philadelphia at its annual business meeting held at the Bellevue-Stratford, January 17, elected the following officers: Dr. G. Oram Ring, president; Drs. Barton Cooke Hirst and Henry Beates, vice presidents; Dr. William S. Wray, secretary; Dr. Lewis H. Adler, Jr., treasurer, and Dr. Edward E. Montgomery, governor.

TENNESSEE

Personal.—Dr. Newton F. Raines, Raines, was seriously injured in a collision between his automobile and an Illinois Central train, while driving over a grade crossing near his home.——Dr. Max J. Sterne, head of the health and sanitary department of Harriman, has resigned and has been succeeded by Dr. Joseph M. Ellenberger.

State Health Board Held Supreme.—By the provisions of an opinion rendered, December 23, to Dr. Olin West, executive officer of the state board of health, by State Attorney Frank M. Thompson the authority of the state board of health over the county and municipal health boards in the suppression of communicable diseases is supreme.

Hospital Items.—A building for tuberculosis patients is much needed at the Eastern Hospital for the Insane, Knoxville.——The Baird-Dulaney Hospital, Dyersburg, is planning extensive improvements, including the establishment of a school for nurses.——The new hospital at the Davidson County Jail was opened, December 14. The hospital will accommodate twelve patients and is thoroughly equipped.——Fire at the Lincoln Memorial Hospital, December 3, damaged a hospital ward of about fifteen beds and caused a loss of from $5,000 to $8,000. Fourteen patients in private rooms and two small wards were removed to the Knoxville General Hospital without casualty.——A new hospital is to be opened at Nashville by Dr. Rufus E. Fort and other local physicians on the site of the Nashville College for Young Women. The hospital will be operated on a 125 bed basis.

TEXAS

Meeting Postponed.—The semiannual meeting of the Northern Texas Medical Association, which was to have been held in Dallas in December, has been postponed for six months.

Personal.—Dr. Edwin C. Ferguson has resigned as health officer of Beaumont, his resignation to become effective, January 21.——Dr. William M. Trimble, Fort Worth, has been reappointed physician for Tarrant County.

Deficiency Appropriation for State Tuberculosis Colony.—As the result of a conference between the governor and Dr. Joseph B. McKnight, superintendent of the State Tuberculosis Colony, Carlsbad, December 23, a deficiency allowance of $20,000 was granted to complete two new dormitories of eighty beds at the institution. There is already a waiting list which will fill the dormitories as soon as they are completed.

New Officers.—At the annual meeting of the Dallas County Medical Society, December 26, Dr. David L. Bettison, Dallas, was elected president and Dr. Minnie L. Maffet and William W. Fowler, both of Dallas, were reelected vice president and secretary-treasurer, respectively.——At the annual meeting of the Tarrant County Medical Society, held in Fort Worth, December 20, Dr. John H. McLean was elected president; Dr. Edwin P. Hall, vice president; Dr. Robert W. Moore secretary, and Dr. Samuel A. Woodward, treasurer.

Health Commission Meet.—The first meeting of the recently created State Commission on Public Health was held in Dallas, December 5. The organizations represented are: the State Medical Association of Texas, State Council of Defense, Committee on Sanitation and Medicine, Texas Town and City Planning Association, State Social Hygiene Association, Public Schools of Texas, Texas Public Health Association, League of Texas Municipalities, State Board of Health, International Health Board, United States Public Health Service and University of Texas, Extension Department.

GENERAL

National Health Tournament.—A "National Tournament in Health Knighthood" will be conducted for the schoolchildren of America, beginning Feb. 9, 1919. The tournament will cover fifteen consecutive weeks of the school year among classes of ungraded schools and the contest will be for credits on a "Record of Health Chores" according to the rules and conditions established, information concerning which may be had from the state antituberculosis associations or health associations of each state.

Personal.—Col. William N. Bispham, M. C., U. S. Army, is announced as the new commanding officer of U. S. General Hospital No. 28, Fort Sheridan, Ill., succeeding Dr. Theodore S. Proxmire, Lake Forest, resigned.——Brig.-Gen. Francis A. Winter, M. C., U. S. Army, has been assigned as commandant of the Army Medical School, Washington, D. C., relieving Col. Weston P. Chamberlain, M. C., U. S. Army, who has been assigned to duty in the office of the Surgeon-General.——Surg. George M. Converse, U. S. P. H. S., San Francisco, who has been in charge of the Portsmouth-Norfolk (Va.) County Health District, has sailed on a special mission to France.

New Publications on Cancer.—A new pamphlet on cancer for distribution to the medical profession has been prepared by a special committee appointed by the board of directors of the American Control of Cancer. The committee includes Drs. Robert B. Greenough, Boston, chairman; James Ewing, New York City, and Jonathan M. Wainwright, Scranton, Pa. The pamphlet will be published in cooperation with the American Medical Association, and is now in press. A new edition of the American Red Cross textbook on "Home Hygiene and Care of the Sick" has been issued. This book contains a chapter dealing with cancer, enumerating early signs of cancer and precursors of cancer, together with a warning to have such conditions given early and competent attention.

Bequests and Donations.—The following bequests and donations have recently been announced:

Jewish Hospital, Philadelphia, and United Hebrew Charities each $2,500 by the will of Walter A. Kuhn.

Germantown and Chestnut Hill Hospital, Philadelphia, each $1,000 by the will of Sarah R. Watson.

St. Vincent's Home, Philadelphia, and Maternity Hospital, each $11,000, and Philadelphia Home for Incurables, $4,000 by the will of Annie E. Sinnott.

Mt. Sinai Hospital and Mt. Sinai Training School for Nurses, New York City, each $10,000 by the will of Kalman Haas.

Columbus, Ohio, Society for the Prevention and Cure of Tuberculosis for a Children's Preventorium, $3,000 by Mrs. William G. Deshler, conditional on an equal amount being raised by the public.

National Association for the Study and Prevention of Tuberculosis, $1,000,000 donation from the American Red Cross.

Report on Antivenereal Campaign.—According to *Public Health Reports*, Jan. 3, 1919, all the states in the Union except Idaho, Michigan, Missouri, New Mexico, Pennsylvania, Tennessee and Utah, and the District of Columbia have complied with the provisions of the so-called Chamberlain-Kahn Act, which provides for a system of federal aid for antivenereal work in states meeting certain conditions. Several other states have signified their intention of cooperation in the near future. At the time of the report 125 clinics were being conducted in conjunction with state boards of health by the Division of Venereal Disease, United States Public Health Service, in which increasing numbers of cases were being treated each month, and additional clinics are demanded. In conjunction with the Red Cross twenty-five clinics are being conducted in extracantonment zones, with social follow-up work. Nurses especially trained and adapted for the work are needed. Five commissioned officers, forty-four acting assistant surgeons and three scientific assistants have been detailed to the various states as venereal disease control officers, and forty acting assistant surgeons have been on duty in the clinics in extracantonment zones. During the period of reconstruction it is expected that the work of venereal disease control will be broadened and intensified.

CANADA

Officers Wounded.—The following C. A. M. C. medical officers have recently been reported wounded: W. Hadden, Winnipeg; J. Burke, River Bourgeoise, N. S.; A. Warner, England; S. Cahille, Sydney, N. S.; J. A. Cooper, Souris, Man.; W. R. Copp, Blyth, Ont.; J. H. Daniel, Brantford, Ont.; J. Crowthers, Calgary; C. R. Deburgh, England; A. Millen, England.

Personal.—Capt. Donald C. Malcolm, M.D., St. John, N. B., and Capt. Finlay Munroe, C. A. M. C., Glengarry, Ont., have been awarded the Military Cross.——Dr. Albert G. Nicholls, professor of pathology and bacteriology, Dalhousie University, Halifax, who has been for three years fortress sanitary officer, in charge of the district laboratory of hygiene, has been appointed D.A.D.M.S. (Sanitation), M.D. No. 6, with rank as major.

University News.—The Medical Faculty of the University of Toronto had 255 students registered in the first year in medicine when it closed for the winter holidays.——Dalhousie University, Halifax, was closed for a month on account of

influenza. The total entry into the faculty of medicine this session was 107.——Fifty new students were enrolled in the medical faculty of the Western University, London, Ont. The total attendance is about 100. The erection of a new medical school is contemplated.

Rewarded for Valor.—Among the members of the C. A. M. C., one has received the Victoria Cross; five have been made Companions of the Bath; sixteen, Companion of St. Michael and St. George; one, Knight Bachelor—Sir Andrew MacPhail, Montreal; one, Order of the British Empire (officer); two, Order of the British Empire (members); thirty, Distinguished Service Order; eighty-four, Military Cross; two, Bar to Military Cross; ninety, mentioned in dispatches; two, Croix de Commandeur; one, Croix de Officier; two, Croix de Chevalier; two, Croix de Guerre; one, Croix de Guerre (Belgium); one, Order of Saint Sava, Fifth Class, Serbia, Capt. Harry J. Shields, Toronto; Silver Medal for Military Valor, Italy, Capt. Howard H. Burnham, Toronto.

Public Health.—The Montreal Board of Health has created a special bureau of child hygiene. The energies of the new bureau will be devoted to reducing the infant mortality in that city which is about the highest in America.——A new medical bill is to come before the Ontario legislature at the coming session.——The Vancouver Medical Society is planning a state medical service. Medical supervision of the schools and the Workmen's Compensation Board will be coordinated with the new service.——The population of British Columbia is put down at 382,689, and 25,000 Indians. In the first six months of 1918 the deaths totaled 2,046; births, 4,940; marriages, 1,443. Tuberculosis was responsible for 236. Cancer showed an increase. In 1917 for the entire year cancer claimed 248, while in the first six months of 1918, the deaths were 144. The percentage of deaths from tuberculosis in the oriental population was 22.49.

GENERAL

Manpower Propaganda.—The United States Public Health Service has begun the work of sending out a series of pamphlets, folders, bulletins and leaflets prepared for the laity in the interest of personal and public hygiene, some of them having especial reference to the avoidance of venereal diseases. V. D. Bulletin 1, issued in cooperation with the Bureau of Education, Department of the Interior, bears the title "Keeping Fit," and treats of what is called the "four great handicaps"—defective eyesight, poor teeth, bad feet and venereal diseases. Other publications in the series are "When They Come Home," which has reference to venereal diseases, and "Venereal Disease, a Public Health Problem for Civilian Communities." This latter leaflet shows in graphic form that venereal diseases bear a relation to other communicable diseases of 102.3 to 29.4; also that venereal diseases among the troops bore a relationship of 5 before enlistment to 1 after enlistment, showing that the problem of venereal diseases is one of the civilian communities. A small pamphlet on "Manpower" treats of the sex question and venereal diseases.

FOREIGN

Hospital Opened at Archangel.—The American Red Cross announced, January 11, that it had established a base hospital of 100 beds at Archangel, Russia, and that eighty patients, almost all of them Americans, were under treatment in the institution.

Venereal Prophylaxis Urged by British Physicians.—In a letter to the London *Times* a number of physicians headed by Sir William Osler and including George Lenthal Cheatle, James Crichton-Browne, Bertrand Dawson, Bryan Donkin, David Ferrier, Rickman Godlee, Leonard Hill, F. W. Mott, G. Archdall Reid and James H. Sequeira, call for the adoption of measures for the prevention of venereal disease in the community following the discharge of soldiers from the Army. The final and the most important paragraph of the letter states:

> It has been abundantly proved during the war that venereal diseases can be controlled by the adoption of simple sanitary measures, the success of which is striking, and the materials for which can be obtained from any chemist. These measures should at once be made known and available, and organized instruction given in their application. This is the only effective way of meeting a dangerous situation—dangerous not only for our soldiers and sailors, but for the population at large. The danger of delay is very great.

Preventable Diseases in Spain.—Some recently published statistics are cited by the *Nuevo Mundo* of Madrid which show that during a recent month there were more deaths than births in nine leading cities of Spain, including Madrid. A serious epidemic of smallpox has been prevailing also at Ciudad Real, and the editorial comments on these facts saying, "Smallpox in the cities and the locust in the fields show the true stage of civilization which Spain has reached. With leprosy—which we also have in Spain and which seems to be increasing at an alarming rate—we have the same plagues and scourges as Morocco and Tartary. It would be absurd here to relate how Japan extinguished smallpox, exterminated it, banished it from the islands of Japan. It was a state campaign and it took five years. It would be absurd to relate either how the Yankees undertook the sanitation of Cuba and conquered yellow fever which has cost so many lives here in Spain. And yet many years have elapsed since the Spanish mandarins have been talking of a policy of sanitation."

CORRECTION

Minnesota News.—In THE JOURNAL, January 11, it was stated under "Minnesota News" that Dr. I. J. Murphy had located at Aitkin, Minn. We are informed by Dr. Murphy that he is at present taking postgraduate work in New York.

MEXICO LETTER

MEXICO CITY, Jan. 12, 1919.

The Typhus Congress

January 14 will be the opening day of this scientific assembly for the purpose of studying typhus. It is to be held in the amphitheater of the Escuela Preparatoria, with Lic. J. N. Macias, the rector of the University, presiding. The president of the congress, Dr. José Terrés, will welcome the members, and Dr. T. G. Perrin will deliver an address. The general sessions will be held from the 15th to the 22d in the Escuela de Ingenieros.

Delegates have been appointed by the Academia de Medicina, the Departamento de Salubridad, the Facultad de Medicina and the governors of the different states of the Republic (11) and addresses will be presented and discussed bearing on the etiology, history, symptomatology, epidemiology, prophylaxis and treatment of tabardillo, or typhus, a disease which is endemic in this country and the exacerbations of which frequently cause a notable increase in the death rate. One of the points which it is expected will be debated with much variance of opinion is the question of the transmission of the disease by lice—as the sole or principal cause of the spread of the disease—as the prevalence of typhus among the well-to-do seems to be at least equal to its prevalence among persons habitually infested with lice, or at least certain clinicians claim to have observed this. The discussion of specific serotherapy, according to Nicolle and Blaizot, will also be one of the features of the meeting, as also the plan to found an institute for experimental research on Tabardillo.

Personal

Ing. Palavicini, who has recently returned from New York, has resumed charge of the daily paper, *El Universal*. He has written much on behalf of the Allies of the Entente, and in his propaganda he did not restrict himself to merely defending the justice of his cause, but proclaimed the urgent moral necessity for Mexico to line up with the forces defending right and justice in order to maintain its reputation as a liberal people. The *Universal* is to have a fortnightly section, to be entitled "Tribuna Medica" which will have the same character as the former Saturday "Medical Page."

Dr. Rafael Cabrera, physician and writer, has been appointed secretary of the Mexican legation in Italy.

At the request of the faculty of the University, Lic. A. Caso has been appointed director of the Escuela de Altos Estudios, of the University. Lic. Caso is a corresponding member of the Real Academia Española, member of the Society of Friends of France, and during the world conflict which has just come to an end, he defended with word and pen the ideals inspiring the nations leagued against Prussian autocracy. The Escuela de Altos Estudios includes in its courses, besides Greek, Latin and German, with French, English and Italian literature and other branches, ophthalmology, dermatology, gynecology, psychiatry, pediatrics, etc.

The Cold Wave

The weather recently has been intensely cold here, something to which we are not accustomed. The mercury registered 17.6 F. (8 below zero C.). So far as I have been able to learn, this drop in the temperature has not affected the morbidity but it is reported from San Luis that one person died from the cold there.

BUENOS AIRES LETTER

Buenos Aires, Dec. 7, 1918.

Influenza

The epidemic which started here October 20 rapidly declined in November, having lasted about twenty-five or thirty days. From 25 to 70 per cent. of the people in different districts were affected. The mortality was rather low, about 1,000, that is, averaging thirty deaths daily for a population of 1,600,000 inhabitants. The new dean of the Facultad de Medicina organized some scientific meetings for discussion of the epidemic; they were attended by students and the public in numbers but not so much by the professors and practitioners. Dr. Penna related that there were forty-nine deaths among the 404 cases in his charge, but he added that the pneumonia cases were mostly directed to his service. Of 132 cases with pulmonary complications, forty-eight terminated fatally. He called attention to a few rare cases with petechial spots. Dr. Llambias reported that the anatomic findings included parenchymatous lesions in various organs and general hemorrhagic phenomena in the serosas and in some of the organs. The microscope showed that the lesions were of the pneumonic type, but atypical. In some cases there seemed to be a lack of fibrin.

Dr. Julio Mendez presented some views which were evidently revolutionary but were not sustained by convincing proofs. He affirmed that the causal agent of influenza is the pneumococcus and that the streptococcus and the Pfeiffer bacillus are simple modifications of the pneumococcus. He advocated the use of a vaccine which he prepares, entitled haptinogeno neumo, the composition of which has not been made public.

A meeting was held at the Instituto Bacteriologico of the Departamento Nacional de Higiene, November 23, at which Dr. Kraus reported that he had found the Pfeiffer bacillus in the sputum in 62 per cent. of the cases of influenza. It was alone in about half the cases and associated in the others with the pneumococcus, streptococcus and parameningococcus. The Pfeiffer bacillus was found in the organs in seventeen of the twenty-seven who had died; it was in pure culture in five, and associated with other bacteria in the others. In the other ten cases he found only the streptococcus and pneumococcus.

LONDON LETTER

London, Jan. 1, 1919.

An Association of the Physicians of the English-Speaking Countries

During the war an enormous number of physicians from the English-speaking countries—America and the Dominions—have passed through and sojourned in England. The British profession and its medical societies have offered them every hospitality. At the house of the principal medical society—the Royal Society of Medicine—the medical officers of the Dominions, America and the Allies have been cordially invited to consider themselves at home and use the library and other rooms. Some hospitality has been shown to the visitors every day by offering them tea, coffee and cigarets between 4 and 6 in the afternoon. At all the military commands throughout the country, medical officers from overseas have been cordially invited to attend clinics, lectures and demonstrations, and in some cases arrangements have been made for systematic courses and elaborate syllabi issued. These facilities have been much appreciated by the visitors. Out of these meetings, which have been a source of pleasure both to hosts and to guests, has grown a movement for forming an association for cooperation in medicine of the English-speaking countries, but not limited to them. Sir Arbuthnot Lane presided over a meeting at the Royal Society of Medicine to further this object. Among those present were Major J. H. Means (United States), Lieutenant-Colonel Castellani (Italy) and Professor Weinberg (Paris). Sir St. Clair Thomson and Mr. J. Y. W. MacAlister (secretary of the Royal Society of Medicine), acting honorary secretaries appointed at a previous meeting, submitted their report. It had been urged that the opportunity presented by the coming together of physicians from America and all parts of the British Dominions should be utilized to form some permanent organization which would result in a closer union between the English-speaking peoples through the medium of the medical profession. A circular setting out these aims was sent to the chiefs of the medical forces of this country, of the Dominions, and of America, and cordial expressions of approval and promises of support were received. The Royal Society of Medicine has given a room for an office which may now be regarded as the headquarters of the association. All the principal London hospitals were communicated with, and in practically every case they cordially responded and invited overseas visitors to come to the hospitals and attend lectures and operations. In the entrance hall a special notice board is placed calling attention to what is going on. Sir St. Clair Thomson, in seconding the adoption of the report, urged that in addition to a bureau of information it was desirable to establish individual and personal cooperation, and that volunteers should offer to take personally conducted parties to hospitals, museums and other medical institutions. Such cooperation would be very effective in creating a permanent entente. A general committee was nominated, and Sir Arbuthnot Lane was appointed honorary treasurer, and Sir St. Clair Thomson, Mr. Douglas Harmer, and Mr. J. Y. W. MacAlister honorary secretaries (pro tempore).

Medical Demobilization

The demobilization of the civilian physicians serving as medical officers in the navy, the army and the air force will be arranged through the Ministry of National Service. Until the general demobilization of the forces begins, the number of medical officers to be demobilized must remain strictly limited; and in view of the serious shortage of physicians in many parts of the country, the officers to be released first must be those whose return to civil practice will maintain and strengthen the medical service of those areas. As soon as general demobilization begins, medical officers will be demobilized on a scheme of priority based on both public and personal grounds; and in order to enable every case to be fully considered, steps are being taken to obtain the necessary information from every serving medical officer. To expedite the release of medical officers who have been on service for a long period and are urgently required at home, the Minister of National Service has decided that newly qualified physicians and medical students who have been protected from recruiting in order to obtain their degree will, as they qualify be called up for service as medical officers, and will continue to serve in this capacity until their services are no longer required, owing to the approaching completion of demobilization, when they will in turn be demobilized.

The Central Medical War Committee has for some time past been considering the various ways in which physicians returning from the services may be assisted to reestablish themselves in civilian practice. A conference on this subject was held between members of the committee and representatives of several benevolent societies, such as the Officers' Families Fund, the National Relief Fund, the War Emergency Fund of the Royal Medical Benevolent Fund, the Professional Classes War Relief Fund, the Committee of Reference, and the Appointments Department of the Ministry of Labor. The object was to discuss the possibilities of giving financial aid (by loan or grant) in the resettlement of physicians, and of cooperation between the various funds. A letter was addressed by the Committee to the War Office, the Ministry of Pensions, the Ministry of National Service, and the Local Government Board suggesting that physicians returning from military service should be given preferential treatment in the large amount of medical work of a military or national character that will be available throughout the country. Some of the work will be new; some of it has been carried out during the past few years by civilian physicians. The committee is of opinion that the authorities concerned should as soon as possible make widely known their intention to give these posts to physicians returning from service whose military experience has familiarized them with the kind of work to be done. With regard to the duties that have been performed up to the present by civilian physicians, the committee holds that when these have been carried out by a rota of physicians, the returned physician should be placed on the rota immediately he applies, and work given to him should he desire it, if necessary by relieving civilian physicians. If accepted, these suggestions will go far to assist the returned physicians during the first few critical months after their release, and will in addition do much to convince them that during their absence they have not been forgotten.

Postgraduate Teaching After the War

The crimes committeed by the Central Powers during the war have by no means been merely the acts of governments but have been zealously carried out by their soldiers and applauded by their peoples. They have never been repudiated

by any class, even by scientists of international reputation, and the medical profession has been guilty of shocking inhumanity to prisoners. Both in this country and in France, leading scientific men have stated that they cannot cooperate with men in enemy countries for some years, and the same feeling prevails in the medical profession. It is therefore likely that the position occupied by Berlin and Vienna as centers of postgraduate instruction will be lost. Professor Adami has expressed the view that Paris will probably become the chief center of postgraduate instruction in Europe, as the French were making every endeavor to achieve this. While in England no one will grudge our gallant allies any success, but on the contrary every one will rejoice in it, much dissatisfaction is felt that no organized attempt is being made to advance the claims of London. The fundamental difficulty is that, excepting ophthalmology and neurology, there is no centralization of medical teaching such as exists in the enemy capitals, and facilities are organized almost entirely for the teaching of students. The difficulty appears to be insuperable. London, it has been said, is not a city but a monster—a conglomeration of many districts equal to cities. As is characteristic of English institutions, the hospitals are the result of private effort and not of government organization. Each of the dozen great London general hospitals with teaching schools attached has grown up and is maintained by private beneficence. Each is a complete medical school devoted to the instruction of students, and is as independent of all others as if they were hundreds of miles away. Scattered through these medical schools are the men whose names are famous throughout the world, but nowhere are they brought to a focus. The foreign graduate who comes here interested in some specialty cannot find any central institution where he can follow all that has been done in that particular line. Even the special hospitals are multiple. There is no university in London devoted to medical teaching, such as centralizes the medical teaching of Edinburgh and has long given that city a leading position among the medical schools of the empire. Attempts have been made from time to time to organize postgraduate teaching in London, but with little success. The last attempt, the Polyclinic, did good service for a few years, but was always in financial difficulties. These were so accentuated by the war that it had to close its doors.

PARIS LETTER

PARIS, Dec. 12, 1918.

Interallied Surgical Conference

The interallied surgical conference for the study of war wounds held its fifth session at the Ecole d'application de médecine et de pharmacie militaires at Val-de-Grâce, November 18-21. The subjects discussed were: anesthesia in war surgery; antigangrene serum therapy; treatment of projectile wounds of the hip joint, kidney and hand, as well as the immediate and remote results of the treatment of arterio-venous aneurysms.

TREATMENT OF PROJECTILE WOUNDS OF THE HIP JOINT

The usual treatment employed in wounds of joints is also indicated in cases of wounds of the hip joint. The prognosis is not as good in these cases, however, as in the case of other joints because of the depth of the articulation, which is unfavorable for early diagnosis, for operative intervention and for drainage in infected cases. Wounds of the joint without bone lesions, or with only slight bone lesions, recognized early, justify an ideal arthrotomy: excision of the track of the projectile, incision of the capsule, evacuation of the blood, removal of foreign bodies, curettage of the bone lesion, cleansing the wound and suture. A comminuted intracapsular fracture seen early may be treated by a resection through the neck, removing as little bone as possible. An extracapsular fracture, with fissures extending into the joint, should be treated like any other extracapsular fracture: removing only such fragments as should be removed, cleansing the wound carefully, with chemical disinfection or tamponade, and secondary suture. When there is suppuration with either an intra or extracapsular fracture, immediate resection of the articular end of the femur is indicated. The postoperative care, especially the position of the limb and its immobilization, is of very great importance. It is of advantage to have the patient walk as soon as possible with the assistance of various orthopedic apparatus. The results, so far as life are concerned, are good in the primary resections and the deferred secondary resections; they are much more uncertain in the early secondary intrafebrile resections. The functional results are in accord with the time of the resection and the amount of bone removed; in general, they are very good for the intracapsular resections, and less favorable in the transtrochanteric or subtrochanteric resections.

PROJECTILE WOUNDS OF THE KIDNEY

When the local signs, the general symptomatology and the roentgenoscopic examination point to some lesion of the kidney only, without involvement of any other organs, operation should not be performed in the following cases: (1) When the projectile has made merely a seton wound or remains enclosed and is of small size; (2) when hematuria is not abundant and lessens progressively each day after the injury; (3) in the absence of a large perirenal hematoma which is not discoverable by an intumescence in the lumbar region. In all other cases it is advisable to operate.

The indications for nephrectomy, partial or complete, are: menacing primary hemorrhage; repeated secondary hemorrhages; grave infections. At the time of operation, the conservation or removal of the kidney will depend on the state of the kidney parenchyma. Before resorting to nephrectomy, the state of the other kidney should be known as positively as possible.

When some other intra-abdominal organ is injured, a lateral or median laparotomy is performed, following the track of the projectile. Subsequent procedures will be dictated by the results of examination of the renal region. In cases of thoraco-abdominal wounds, the lung and kidney must be treated separately, profiting as much as possible from a single wound of entrance, closing the diaphragmatic wound carefully to isolate the two foci.

In cases of kidney wounds not only the local lesion must be considered, but also the necrosis which may follow in the territory supplied by the blood vessels in the region of the hilus and of the parenchyma. The function of an injured kidney which has been treated conservatively, tends to reestablish itself, provided that infection can either be prevented or checked.

PROJECTILE WOUNDS OF THE HAND

Wounds of the hand are treated in the same manner as all other war wounds. Conservative methods should be pushed to the furthermost limit. Immediate operations should, preferably, be economical operations, making for union by first intention, with surgical repair of tendons and nerves. A limited bone resection may be done to obtain a soft scar and a good position. The quality of the scar as well as the mobility of the tendons and of the joints are of more importance than complete conservation of the bony skeleton. During cicatrization, the wounded zone should be immobilized in a good position, but immediate motion, active and passive, of all sound parts, and the early mobilization of the injured part or region, are important. After cicatrization, it is, again, mobility that must be obtained. The lesions of the phalanges and phalangeal joints are treated in the same manner as are injuries of the larger bones and joints of the members, that is to say, by removal of bone fragments and primary suture or early secondary suture. In the case of the thumb, resection of the joint is preferable to amputation. Whenever there is present the possibility that a finger is destined to become completely stiff, without any chance for motion, amputation should be done. Resection of the head of the corresponding metacarpal is always indicated after disarticulation of the index or little finger. In cases of fracture of a metacarpal, total esquillectomy is indicated, preferably through the back of the hand. In carpal-metacarpal lesions, resection is generally limited to the affected bones. Division and loss of parts of tendons are treated in the usual manner, varying with the site and extent of the lesion. Adhesions following tendon surgery are the greatest obstacle to motion. Immediate and continuous motion will do much to avoid this complication. In cases of extensive injury of the metacarpal region, high amputation of the metacarpals is preferable to disarticulation at the wrist.

IMMEDIATE AND REMOTE RESULTS OF THE TREATMENT OF ARTERIO-VENOUS ANEURYSM

Arterio-venous aneurysms, except in rare instances, do not heal spontaneously. Surgical intervention is indicated because of the complications which may eventually develop later, especially in the legs. Operation should be delayed for at least two months, unless immediate intervention is demanded by rapid increase in size or aggravation of the functional disturbances. The ideal operation consists in separation of the two vessels and lateral suture of the connecting openings in each. When the opening in either vessel is larger than half of its circumference, and if the involvement of the vessel wall does not exceed 3 cm. in length, resection and end-to-

end suture is the method of choice. When a conservative operation cannot be done, extirpation of the aneurysm, that is, the union of the two vessels, is the best method of treatment. If neither of these procedures can be carried out, then ligation of each vessel above and below the aneurysm, (four ligatures) is indicated.

Centralization of Reconstruction Work

The Office national des mutilés et réformés de la guerre, which was established in 1918 (The Journal, June 8, 1918, p. 1784), recently held its official meeting at the ministry of labor. M. Henry Chéron, president of the administrative committee, explained the work of the committee since its foundation, the organization itself, etc. Dr. Queuille presented a report on the results obtained by the schools for professional reeducation of the maimed, and on the reforms brought about and the formation of new centers.

The assembly discussed and voted the budget for 1919 in which were embodied the credits necessary for the constitution of departmental and local committees, for the maintenance of the schools of professional reeducation and the establishment of new schools, and funds to be advanced to the maimed and invalided, after training, for the purpose of enabling them to gain a foothold in their new field of activity.

Medical Students and Demobilization

Dr. Louis Mourier, undersecretary of state for the Service de Santé militaire, has laid down the following rules for the demobilization of medical students: "We have never ceased to claim of the Etat-Major all those students possessing credits in physics, chemistry and natural sciences, although the commandant was unwilling to let us have any students except those who had several inscriptions of the doctorate, two, for example. Now that the armistice has been signed, the demands of the high command have lost much of their value and we hope to be able to secure in the near future all the students of the class of 1916 (22 years of age) and preceeding years who have the necessary credits in physics, chemistry and natural sciences and two inscriptions of the doctorate. Most of these men have already been sent to Bordeaux, Lyon and Paris to become *médecins auxiliaires*. They remain subject to their military obligations, but they will go on with their medical studies in these university centers. The signing of the armistice makes it possible to send a larger number of the students back to the cities, where are the faculties and the schools in which they were enrolled. In the morning they are required to care for the sick and wounded who are still under treatment in the military hospitals. In the afternoon they take up the practical work pertaining to their medical studies. It is desired that during the year 1919 they can complete in six months a whole year's work in medicine. These students will be assigned to this work in successive groups. The system will no doubt be in full operation by February 1. These measures will meet the medico-military needs which must be met until such time as all classes of the reserve are demobilized, and also are to the best interests of the medical corps."

Training School for Nurses for the Tuberculous Poor

A special subscription was opened in London for the Société de secours aux blessés militaires (one of the three societies forming the French Red Cross) for the purpose of enlarging one of its hospitals into a training school for nurses to care for the tuberculous poor, and to endow this establishment with all modern hygienic accessories. The sum of 450,000 francs has already been subscribed and handed over to the Lyons branch of the Société de secours aux blessés militaires.

Franco-American Friendship

The students of the University of Lyon recently tendered a reception in the large amphitheater of the medical faculty to the American medical students among the troops in the cantonments of that region. The highest local authorities were present in honor of the occasion—the military governor, the mayor, the rector and professors of the university and the consuls of the allied nations. Addresses were delivered by MM. Bernard, president of the Association générale des étudiants; Joubin, rector of the university, and Mayor Herriot, who rendered homage to the noble character of President Wilson, and invited the American students to come in numbers to the University of Lyon, where a most cordial welcome awaits them.

Personal

At a meeting held December 16, the Académie des Sciences elected Mr. David Bruce of London, England, a corresponding member of the section on medicine and surgery.

Deaths

George Grant Gere, San Francisco; Eclectic Medical Institute, Cincinnati, 1871; aged 70; a veteran of the Civil War; professor of anatomy from 1881 to 1886, and of surgery from 1886 to 1906, in the California Medical College; formerly president of state and vice president of national eclectic medical societies, and secretary of the state board of medical examiners; visiting surgeon to the San Francisco City and County Hospital, a member of the staff of the Balboa Hospital and supreme surgeon of the Royal Knights of America; died at his home, December 29, from lobar pneumonia.

Clyde Lorenzo Carey ✠ **Lieut., M. C., U. S. Army,** Elmira, N. Y.; University of Buffalo N. Y., 1910; aged 34; president and formerly secretary of the Chemung County Medical Society; who was discharged from the Army, December 18; died at his home, January 6, from pneumonia. A special meeting of the Chemung County Medical Society and Elmira Academy of Medicine was held in the room of the latter organization, January 8, at which resolutions were adopted regarding the death of Dr. Carey.

Robert Lord Hull ✠ **Major, M. C., U. S. Army,** Oklahoma City; Jefferson Medical College, 1902; aged 43; associate professor of orthopedic surgery in the University of Oklahoma, Norman and Oklahoma City; chief surgeon of the Emergency and St. Anthony hospitals, Oklahoma City; on duty as head of the orthopedic department at Letterman General Hospital, Presidio, San Francisco; died in that institution, January 5, from pneumonia following influenza.

Frank Wyman Lamb, Akiak, Alaska; Detroit Homeopathic College, 1908; aged 31; owner of a private hospital at Akiak; a member of the commission of surgeons named by the territorial government of Alaska, to combat influenza; for four years a member of the commission appointed by the board of education to aid in promoting health conditions among the children of Alaska; died at Old Hamilton, at the mouth of the Yukon River, December 23, from influenza.

John McMaster Ristine ✠ Cedar Rapids, Iowa; Bellevue Hospital Medical College, 1876; aged 71; consulting surgeon to St. Luke's Hospital; a member of the American Association of Railway Surgeons; district surgeon to the Chicago and Northwestern, Rock Island and Illinois Central systems; one of the most prominent practitioners of central Iowa; died at his home, January 9, from heart disease.

Herbert Martin Howes ✠ **Capt., M. C., U. S. Army,** Portland, Me.; Bowdoin Medical School, Brunswick and Portland, 1917; aged 28; an intern in the Maine General Hospital, Portland; and assistant professor of pathology in his alma mater; who was discharged from the Medical Corps of the Army, December 21; died in Brunswick, Me., January 5, from pneumonia following influenza.

Samuel Leo Oren ✠ **Lieut., M. C., U. S. Army,** Lewistown, Ill.; Barnes Medical College, St. Louis, 1899; aged 39; a specialist on diseases of the eye, ear, nose and throat; who after a course of training at Fort Oglethorpe, Ga., was sent overseas; died in France, October 9, from nervous collapse presumably following ambulant typhoid fever.

Herbert Leer McNeil ✠ **Lieut., M. C., U. S. Army,** Houston, Texas; Johns Hopkins University, Baltimore, 1911; aged 32; associate professor of medicine and clinical pathology in the University of Texas, Galveston; on duty with the American Expeditionary Forces, in Camp Hospital No. 30, France; died, November 3, from bronchopneumonia.

Charles Henry Weintz ✠ **Capt., M. C., U. S. Army,** Cincinnati; Maimi Medical College, Cincinnati, 1909; aged 33; a specialist in diseases of the eye, ear, nose and throat; assistant chief of the nose and throat department of the base hospital, Camp Sherman, Chillicothe, Ohio; died at Camp Sherman, October 14, from pneumonia.

Louis Becker, Knoxville, Ill.; Northwestern University Medical School, Chicago, 1888; aged 54; a member of the Illinois State Medical Society; physician in charge of the Knox County Almshouse and Insane wards; and physician to St. Mary School and St. Albans Academy, Knoxville; died at his home, about January 5.

Carl Edward Holmberg ✠ **Lieut.-Col., M. C., U. S. Army,** Whipple Barracks, Ariz.; Jefferson Medical College, 1908; aged 39; commanding officer of U. S. Army General Hospital No. 20, Whipple Barracks, Ariz.; who entered the Medical Corps of the Army, Sept. 1, 1909; died in that institution, January 1, from pneumonia.

✠ Indicates "Fellow" of the American Medical Association.

William A. Allen, Donnellson, Ill.; Missouri Medical College, St. Louis, 1878; aged 62; a member of the Illinois State Medical Society; one of the organizers and president of the State Bank of Donnellson; died in St. Francis' Hospital, Litchfield, Ill., January 5, from septicemia due to scratch of the right index finger.

Joseph Alphonse Furlong ✠ Lieut., M. C., U. S. Army, Spring View, Neb.; St. Louis University, 1912; aged 29; on duty with the American Expeditionary Forces in France; while returning from leave spent in Ireland, was killed off Kingstown, Ireland, by the torpedoing of the steamship *Leinster,* October 10.

Frank Watson Jackson ✠ New York City; College of Physicians and Surgeons in the City of New York, 1879; aged 63; a fellow of the New York Academy of Medicine; consulting physician to Bellevue and Roosevelt hospitals; professor of clinical medicine in his alma mater; died at his home, January 8.

George M. Clouse, Columbus, Ohio; Columbus (Ohio) Medical College, 1890; aged 57; president of the Practitioners' Medical Society; one of the founders of the Ohio State Pediatric Society; professor of diseases of children in the Ohio University; died at his home, January 5, from heart disease.

Jerome McKaig Leonard ✠ Lieut., M. C., U. S. Army, Douglas, Ariz.; Hahnemann Medical College, Chicago, 1906; aged 34; on duty with the American Expeditionary Forces in France; is reported to have been killed in action in France, November 8.

Davis Neeper Richards ✠ Lieut., M. C., U. S. Army, Germantown, Md.; Johns Hopkins University, Baltimore, 1915; aged 28; on duty with Evacuation Hospital No. 49, American Expeditionary Forces, since June, 1918; died at Camp Merritt, N. J., October 12, from bronchial pneumonia following influenza.

John Edwin Ray, Jr. ✠ Capt., M. C., U. S. Army, Raleigh, N. C.; Cornell University, New York City, 1912; aged 31; a specialist in surgery; on duty with the American Expeditionary Forces in France; died, October 5, from wounds received in action in Bellicourt, September 22.

William Marks Lewis, Sharon, Pa.; College of Physicians and Surgeons, Baltimore, 1892; aged 57; a member of the Medical Society of the State of Pennsylvania; died, December 30, from heart disease on a Pennsylvania train between New Brighton and New Castle, Pa.

Died in the Service
IN FRANCE
LIEUT. JEROME MCKAIG LEONARD,
M. C., U. S. ARMY, 1884-1918

James Francis Gorman ✠ Lieut. (j. g.), U. S. N. R. F., Manchester, Conn.; Georgetown University, Washington, D. C., 1911; aged 34; who had been on duty at the Brooklyn Navy Yard; died at his home in Manchester, December 28, from pneumonia following influenza.

William D. Donne, North Scranton, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1888; aged 55; also a pharmacist; for three years outdoor physician for the poor; and until recently a member of the staff of the Farview Hospital; died at his home, January 8.

John Victor Bean ✠ Fairfield, Iowa; Bellevue Hospital Medical College, 1868; aged 75; acting assistant surgeon, U. S. Army, in 1868 and 1869; lecturer on sanitary science in Parsons College, Fairfield; city health officer of Fairfield; died at his home, January 7.

Horace Melville Simmons ✠ Baltimore; University of Maryland, Baltimore, 1881; aged 64; associate editor and part owner of the *Medical Review of Reviews;* founder and owner of the *Maryland Medical Journal;* died suddenly at Mountain Lake, N. J., January 5.

Joseph S. Herndon, Ashland, Ore.; Willamette University, Salem, Ore., 1874; aged 70; at one time a member of the Oregon State Medical Association; was run over and killed by a locomotive in the railroad yards at Roseburg, Ore., December 6.

Mitchell Mikkelsen ✠ Wells, Minn.; College of Physicians and Surgeons, Keokuk, Ill., 1877; University of Illinois, Chicago, 1884; aged 68; a specialist in diseases of the eye, ear, nose and throat; died at his home, January 8, from pneumonia.

Stanley Lee Cassell ✠ Lieut., M. C., U. S. Army, Sweet Grass, Mont.; University of Illinois, Chicago, 1914; aged 28; on duty with the American Expeditionary Forces in France; was killed, November 4, at Earle Fontaine, France, by shell explosion.

Joseph N. Eldred, Chesaning, Mich. (license, Michigan, years of practice, 1900); aged 81; a member of the Michigan State Medical Society; a practitioner for fifty-eight years; also a druggist; died at his home, December 20, from senile debility.

Lester Linwood Schwab ✠ Benson, Ariz.; University College of Medicine, Richmond, Va., 1900; aged 40; who after sixteen years' practice in Roanoke, Va., went to the Southwest in 1916, in search of health; died at his home, December 28.

Benjamin Franklin Hawn, Youngstown, Ohio; Bellevue Hospital Medical College, 1873; aged 61; was killed in Youngstown, December 22, when his automobile was struck by a New York Central train at a grade crossing.

Elmer T. Bunten, Flemingsburg, Ky.; Kentucky School of Medicine, Louisville, 1907; aged 35; a member of the Kentucky State Medical Association; died at his home, November 9, from bronchial pneumonia following influenza.

Robert Eldridge Hearn ✠ Lieut., M. C., U. S. Army, Mabank, Texas; University of Louisville, Ky., 1904; aged 39; on duty at the camp hospital at Camp Funston, Leon Springs, Texas; died, October 18, from bronchopneumonia.

Stewart Wiley Pryor ✠ Chester, S. C.; Atlanta (Ga.) Medical College, 1887; aged 54; owner of the Pryor Hospital, Chester, and a well-known surgeon of upper South Carolina; died at his home, December 27, from pneumonia.

Elmer Ellsworth Lenhardt, Millersville, Pa.; Temple University, Philadelphia, 1909; aged 35; a member of the Medical Society of the State of Pennsylvania; died at his home, October 6, from pneumonia following influenza.

Ella T. Colby, Roads, Mo.; St. Louis Woman's Medical College, 1895; aged 51; a member of the Missouri State Medical Association; died in the Kansas City (Mo.) Research Hospital, November 3, from pernicious anemia.

Casper Joseph Middlekauff ✠ Lieut., M. C., U. S. Army, Hayes, Kan.; Jefferson Medical College, 1917; aged 31; on duty with the American Expeditionary Forces in France; died in France, October 8, from pneumonia.

John Comas Matthews ✠ Springfield, Mo.; Missouri Medical College, St. Louis, 1890; aged 53; local surgeon of the Missouri Pacific System; and formerly coroner of Green County; died at his home, December 7.

Peter Sylvester MacDonald ✠ Chicago; Rush Medical College, 1864; aged 82; for several years professor of anatomy in the Northwestern University Woman's Medical School, Chicago; died at his home, January 20.

Robert L. Roll, Kirkmansville, Ky.; University of Louisville, Ky., 1893; aged 47; a member of the Kentucky State Medical Association; died in the Jennie Stuart Hospital, Hopkinsville, December 30, from arteritis.

Samuel Dana Henderson ✠ Lieut., M. C., U. S. Army, Lansford, N. D.; Tulane University, New Orleans, 1916; aged 30; died in Camp Greenleaf, Fort Oglethorpe, Ga., October 19, from pneumonia following influenza.

Benjamin F. Books, Altoona, Pa.; Hahnemann Medical College, Philadelphia, 1883; aged 59; formerly president of the Pennsylvania Homeopathic Society; died in Colorado Springs, December 22, from asthma.

Clarence Frederick Rulmann, Minster, Ohio; Ohio State University, Columbus, 1915; aged 28; a member of the Ohio State Medical Association; died at his home, October 19, from pneumonia following influenza.

Burgess Allen Gibson ✠ Lieut., U. S. Army, Washingtonville, Pa.; Jefferson Medical College, 1913; aged 30; is

reported to have died in France, November 3, from the effects of wounds received in action.

George P. Smartt, Manor, Texas; Baylor University, Dallas, Texas, 1905; aged 38; a member of the State Medical Association of Texas; died in Austin, Texas, December 26, from pneumonia following influenza.

Thomas Hays, Deland, Fla.; Albany (N. Y.) Medical College, 1881; aged 90; for many years a practitioner of Clearfield Corners, N. Y.; died at the home of his son in Deland, December 27, from pneumonia.

Gerald J. Fitzgibbon ✠ San Francisco; Cooper Medical College, San Francisco, 1877; aged 63; died in St. Francis' Hospital, San Francisco, January 10, from bronchial pneumonia following influenza.

Quincy A. Tipton, Cottonwood Point, Mo.; University of Louisville, Ky., 1877; aged 74; a member of the Missouri State Medical Association; died at his old home in Blythevill, Ark., November 11.

Arthur Robert Ohman, Chicago; University of Illinois, Chicago, 1913; aged 27; a member of the Illinois State Medical Society; died at his home, January 11, from pneumonia following influenza.

Laurence Joseph Simonton, Cumberland, Md.; George Washington University, Washington, D. C., 1909; aged 38; a specialist in urology; died at Centerville, Pa., October 10, from tuberculosis.

Oliver Austin Everett, Bolton, Mass.; Dartmouth Medical School, Hanover, N. H., 1885; aged 58; for twenty-three years postmaster of Bolton; died at his home, January 2, from influenza.

Albert Wilson Nash ✠ North Haven, Me.; Bowdoin Medical School, Brunswick and Portland, Me., 1895; aged 47; died at his home, December 3, from empyema following pneumonia.

Nancy Maria Hill, Dubuque, Iowa; University of Michigan, Ann Arbor, 1874; aged 85; a volunteer nurse for three years during the Civil War; died in Finley Hospital, Dubuque, January 8.

Thomas M. Thayer, Herman, Minn.; New York Homeopathic Medical College, New York City, 1900; aged 42; died at his home, December 22, from pneumonia following influenza.

Clyde Everett Shedd ✠ **Lieut., M. C., U. S. Army,** San Francisco; Oakland (Calif.) College of Medicine and Surgery, 1917; aged 25; was killed in action in France, October 16.

Julius Lewis Shryer ✠ **Lieut., M. C., U. S. Army,** Durant, Iowa; Chicago College of Medicine and Surgery, 1917; aged 29; died from bronchial pneumonia in France, November 4.

Frank Philip Schneider, Rochester, N. Y.; Albany (N. Y.) Medical College, 1916; aged 28; died at a hospital in Rochester, December 31, from rheumatic endocarditis.

Robert H. Bradley ✠ Marshall, Ill.; Northwestern University Medical School, Chicago, 1873; aged 74; died in his office at Marshall, January 4, from heart disease.

William W. Cunningham, Offerle, Kan.; University of Louisville, Ky., 1908; aged 37; died at Spearsville, Kan., December 2, from pneumonia following influenza.

Frederick W. Schneerer, Norwalk, Ohio; Eclectic Medical Institute, Cincinnati, 1875; aged 68; died at his home, about December 22, from pneumonia following influenza.

John A. Ferguson ✠ Sault Ste. Marie, Mich.; Detroit College of Medicine and Surgery, 1903; aged 43; died at his home, October 4, from valvular heart disease.

Chauncey Macaulley Marstin, Braintree, Mass.; Howard University, Washington, D. C., 1880; aged 73; a veteran of the Civil War; died at his home, January 6.

Prince Edwin Luce, Brooks, Me. (license, Maine, Act of 1895); aged 60; died at the home of his sister in Clinton, Me., December 13, from cerebral hemorrhage.

Virginia Harley McKnight ✠ Fair Haven, N. Y.; University of Michigan, Ann Arbor, 1873; aged 77; died at her home, December 28, from heart disease.

Madison Canaday, Eugene, Ore.; a practitioner for fifty years; aged 87; died at the home of his daughter in Crow, Ore., December 14, from senile debility.

Marie M. Simons Romine Perfect, Columbus, Ohio; Woman's Medical College of Cincinnati, 1894; aged 49; died at the home of her mother, January 2.

Antoinette K. Fellows, Chicago; Hering Medical College, Chicago, 1896; aged 73; died at her home, January 5.

Charles Joseph Turvey, Albuquerque, N. M.; North Carolina Medical College, Charlotte, 1910; aged 32; died in Albuquerque, recently, from tuberculosis.

Benjamin P. Wilson, Lake Butler, Fla.; Charity Hospital Medical College, New Orleans, 1876; aged 68; died at his home, December 17, from nephritis.

James Monroe Rainey, Chicago; Eclectic Medical Institute, Cincinnati, 1893; aged 51; died in a sleeping car between Omaha and Chicago, December 30.

Mathew Brinkerhoff DuBois, New York City; College of Physicians and Surgeons in the City of New York, 1868; aged 77; died at his home, December 29.

Elmer Roscoe Cravens, Linton, Ind.; Kentucky School of Medicine, Louisville, 1888; aged 56; died at his home, January 6, from cerebral hemorrhage.

Otho E. Francis, Dayton, Ohio; Kentucky School of Medicine, Louisville, 1878; aged 68; died in the Miami Valley Hospital, Dayton, December 31.

William E. Trueblood ✠ Fairfield, Calif.; Physio-Medical College of Indiana, Indianapolis, 1897; aged 52; died in Oakland, Calif., December 29.

Jeremiah D. Phelan, Brooklyn; Long Island College Hospital, Brooklyn, 1883; aged 57; died in St. Peter's Hospital, Brooklyn, January 2.

Joseph Azel Knox, Whiteside, Mo.; Washington University, St. Louis, 1865; aged 79; died at his home, December 25, from senile debility.

Albert Claypool, Toledo, Ohio; New York Homeopathic Medical College, New York City, 1876; aged 72; died at his home, December 30.

Solomon P. Stoddard, Indianapolis; University of Heidelberg, Germany, 1863; aged 77; died at his home, December 22, from influenza.

Sidney Wells Johnson, Akron, Ohio (license, years of practice, 1897); aged 73; a veteran of the Civil War; died at his home, January 6.

Homer Curtis Potter ✠ Des Moines, Iowa; Eclectic Medical Institute, Cincinnati, 1855; aged 84; died at his home, December 24.

Melville M. Moffitt, Washington, D. C.; Homeopathic Hospital College, Cleveland, 1882; aged 61; died at his home, December 29.

George Granville Monroe, Chicago; University of Michigan, Ann Arbor, 1878; aged 66; died at his home, January 8, from uremia.

William Orson Congdon ✠ Cuba, N. Y.; University of Vermont, Burlington, 1896; aged 69; died at his home, October 18.

Theodore Kiss, Jr., Trenton, N. J.; University of Budapest, Hungary, 1894; died at his home, January 4, from cerebral hemorrhage.

Charles H. Brunk, Windsor, Ill.; Rush Medical College, 1865; aged 93; died at his home, January 4, from senile debility.

Edward Patrick Ryan, St. Paul; Rush Medical College, 1886; aged 54; died at his home, December 31, from heart disease.

Walter Howland Squires ✠ Roulette, Pa.; Jefferson Medical College, 1899; died at his home, December 6.

Samuel H. Pettigrew, Springdale, Pa.; Jefferson Medical College, 1872; died at his home, January 1.

Robert R. Freeman, Tucson, Ariz.; Vanderbilt University, Nashville, Tenn., 1875; died recently.

Marriages

EDWARD FREDERICK MEISTER, Lieut., M. C., U. S. Army, Buffalo, to Miss Mabel C. Hope of Walthamstow, Essex, England, November 24.

GEORGE CLINTON ANDREWS, Tarrytown, N. Y., to Miss Ina Washington Rigsby, Army Nurse Corps, December 17.

FRANCIS R. ANTHONY, Maryville, Mo., to Miss Cora M. Price of Fort Smith, Ark., December 24.

IVAN PETROFF BALABANOFF, Tacoma, Wash., to Miss Edith Weller of Winona, Minn., January 1.

LUCIA KEMP, Bucyrus, Ohio, to Mr. L. C. Feighner, December 31.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

MISBRANDED NOSTRUMS

How the Bureau of Chemistry Is Protecting the Public Against Fraudulent or Misleadingly Advertised "Patent Medicines"

Royal Baby's Safety.—Shipped by Koloman Kovacs, trading as the Royal Mfg. Co., Dequesne, Pa. Analysis showed the product to contain, among other substances, approximately ⅛ grain morphin sulphate to each fluidounce, with alcohol, sugar, Rochelle salts and vegetable extractives, and indications of santonin. Falsely, fraudulently and misleadingly advertised. Fine, $50 and costs.—[*Notice of Judgment No. 5453.*]

Simpson's Cerebro-Spinal Nerve Compound.—Shipped by Chas. M. Simpson, trading as Dr. C. M. Simpson's Medical Institute, Cleveland, Ohio. Analysis showed the product to consist principally of alcohol, bromid, ammonium carbonate, and organic matter. Falsely and fraudulently advertised. Fine, $200 and costs. Defendant moved that the verdict and judgment be set aside and a new trial granted; motion overruled by the court. Defendant appealed case; Appellate Court affirmed the judgment of the lower court.—[*Notice of Judgment No. 5526.*]

Constitution Water.—Shipped by Stephen Demby, New York City. Analysis showed the product to consist essentially of a water-alcohol solution of iron acetate or chlorid, or both, glycerin, strychnin, and small amounts of alum and Epsom salt. Falsely and fraudulently advertised. Fine, $2.—[*Notice of Judgment No. 5530.*]

Tweed's Liniment.—Shipped by Wm. L. Davis, manager of Tweed Liniment Co., Chelsea, Mass. Analysis showed it was essentially a water-alcohol solution of chloroform, ammonia, turpentine, sassafras oil, and fixed oils. Falsely and fraudulently advertised. Fine, $10.—[*Notice of Judgment No. 5536.*]

Pulmonol.—Shipped by the Pulmonol Chemical Co., Brooklyn. Analysis showed the product to be essentially a glycerin-water solution of benzoate of soda, guaiacol sulphonate, and a little strychnin, colored with a coal-tar dye. Falsely and fraudulently advertised.[1] Fine, $25.—[*Notice of Judgment No. 5535.*]

Crown Skin Salve and Pile Cure.—Shipped by the Grace Medical Co., Des Moines, Iowa. Analysis showed the "Skin Salve" to be an ointment containing approximately 85 per cent. petrolatum, 7.6 per cent. mercuric oxid, 1.42 per cent. calomel, with indications of small quantities of camphor or menthol. Analysis of the "Pile Cure" showed it to consist of coco fat, tannic acid, atropin, alum, and talc. The "Salve" was falsely and misleadingly advertised, and the "Pile Cure" falsely and fraudulently advertised. Fine, $30 and costs.—[*Notice of Judgment No. 5591.*]

King of the World and Family Liniment.—Shipped by Gilbert L. Vrooman, Pierrepont Manor, N. Y. Analysis showed the product to contain over 84 per cent. of alcohol, 6.88 minims of tincture of opium to the ounce, with red pepper and saffrol present. Falsely and fraudulently advertised. Fine, $2.—[*Notice of Judgment No. 5592.*]

Ka-Ton-Ka.—Shipped by the Oregon Indian Medicine Co., Corry, Pa. Analysis showed the preparation to be essentially a mixture of alcohol, sugar, aloes and baking soda. Falsely and fraudulently advertised. Fine, $200 and costs.—[*Notice of Judgment No. 5537.*]

Greenhalgh Diphtheria Remedy.—Shipped by the Greenhalgh Remedy Co., Salt Lake City, Utah. Analysis showed it to be essentially a mixture of sulphur, borax, a trace of starch, plant tissue carrying berberin, iron, aluminum and potassium, as sulphates and nitrates, with charcoal and traces of manganese dioxid indicated. Falsely and fraudulently advertised. Fine, $100.—[*Notice of Judgment No. 5546.*]

Mountain Rose Tonic Tablets and Herbaline.—Shipped by the Springsteen Medicine Co., Cleveland. Analysis showed the "Tablets" to contain boric acid, tannin (or gallic acid), a zinc compound, unidentified alkaloidal material, vegetable extractive, sugar and acid-insoluble material, apparently talc. "Herbaline" was found to be essentially an ointment with a petrolatum base containing oil of eucalyptus, a thujone, containing oil such as tansy, and a small quantity of material insoluble in petroleum-ether but somewhat soluble in ether or chloroform. Both were falsely and fraudulently advertised. Fine, $100 and costs.—[*Notice of Judgment No. 5586.*]

Parmint.—Shipped by the International Laboratories, Binghamton, N. Y. Analyses of samples showed the stuff,[2] at various times, to contain from 9 to 15 per cent. of alcohol, about 3 per cent. volatile oil, from 14 to 33 grams of glycerin to each 100 c.c., and from 1 to 2 minims of chloroform to the ounce, also oil of peppermint, oil of turpentine, camphoraceous oil, and quinin. The product was colored with cochineal. Falsely and fraudulently advertised. Fine, $200.—[*Notice of Judgment No. 5593.*]

Sulphurro.—Shipped by the C. M. C. Stewart Sulphur Co. (Inc.), Seattle. Analysis showed the stuff[3] to contain about 4 grams of sulphur to each 100 c.c. and about 1½ grams of calcium to each 100 c.c. Falsely and fraudulently advertised. Fine, $150.—[*Notice of Judgment No. 5594.*]

"Liveon, The 90 Day Consumption Cure" and "Liveon Lung Discs."—Shipped by George H. Center, Du Quoin, Ill. Analysis showed the "90 Day Consumption Cure" to be a water solution containing sugar, plant material, emodin, tar and acetic acid. The "Lung Discs" contained essentially emodin, plant material, tar, starch and sugar. Both were falsely and fraudulently advertised. Fine, $50 and costs.—[*Notice of Judgment No. 5937.*]

White Beaver's Cough Cream and Wonder Worker.—Shipped by the Spence-McCord Drug Co., La Crosse, Wis. Analysis of the "Cough Cream" showed it to contain morphin, chloroform, creosote, ammonium chlorid, and methyl salicylate. Analysis of the "Wonder Worker" showed it to contain over 74 per cent. of alcohol, also chloroform, morphin, camphor, red pepper, oil of turpentine, and ammonia. Both were falsely and fraudulently advertised. Fine, $300.—[*Notice of Judgment No. 5599.*]

1. This product, sold as a cure for consumption, was analyzed by the chemical laboratory of the American Medical Association in 1913, and exposed in the Propaganda Department of THE JOURNAL of the A. M. A., Nov. 29, 1913. The matter is reprinted in the pamphlet, "Consumption Cures," published by the American Medical Association, Price 20c.

2. This product was briefly discussed in the Propaganda department of THE JOURNAL, Aug. 18, 1917, p. 582.

3. Sulphurro was examined in the A. M. A. Chemical Laboratory six years ago. The article appeared in THE JOURNAL, March 9, 1912, and is reprinted in "Nostrums and Quackery," 2d edition.

Watkins' Vegetable Anodyne Liniment, Female Remedy, and Kidney Tablets.—Shipped by the J. R. Watkins Medical Co., Winona, Minn. Analysis showed the "Anodyne Liniment" to be essentially a water-alcohol solution of oleoresin capsicum, camphor, oil of sassafras, and opium. The "Female Remedy" was found to contain over 19 per cent. of alcohol and unidentified extractive matter bearing emodin. The "Kidney Tablets" appeared to contain buchu, oil of juniper, pichi, magnesium, calcium, potassium and carbonates and nitrates. All were falsely and fraudulently advertised. Fine, $30.—[*Notice of Judgment No. 5605.*]

Nature's Creation Co.'s Discovery.—Shipped by the Nature's Creation Co., Columbus, Ohio. Analysis showed the product to be a water-alcohol solution containing inorganic material, apparently combined as magnesium sulphate and potassium iodid, with some emodin-bearing vegetable matter. Accompanying the solution was a tablet containing iron, sulphates, aloes, and licorice. Falsely and fraudulently advertised.[4] Fine, $100 and costs.—[*Notice of Judgment No. 5610.*]

Radium Healing Balm.—Shipped by J. H. Frank Smokey, who traded as Uranium Mining Co., Denver. Analysis showed the stuff to be a soap with the odor of sassafras, and containing 9.3 per cent. of washing soda, 4.6 per cent. of baking soda, with 1.1 per cent. of sand, and 56.4 per cent of water. Falsely and fraudulently advertised. Fine, $10 and costs.—[*Notice of Judgment No. 5614.*]

Phuton Kidney Remedy.—Shipped by Mastin L. Williams, Arkansas City, Kan. Analysis showed the stuff to consist largely of water with about 3.5 per cent. alcohol and small quantities of plant extractive, ammonium chlorid, salicylic and tannic acids, and oils of sassafras and wintergreen. Falsely and fraudulently advertised. Fine, $5 and costs.—[*Notice of Judgment No. 5619.*]

Palmer's Skin Whitener.—Shipped by the Jacobs' Pharmacy Co., Atlanta, Ga. Falsely and fraudulently advertised. Ordered destroyed by the court.—[*Notice of Judgment No. 5598.*]

Byrnes Baby Relief.—Shipped by the Byrne Drug Co., Archbald, Pa. Falsely and fraudulently advertised. Product ordered destroyed; claimant to pay the cost of proceedings.—[*Notice of Judgment No. 5626.*]

Sayman's Healing Salve and Vegetable Wonder Soap.—Shipped by Thos. M. Sayman, St. Louis. Analysis showed the "Healing Salve" to contain chiefly petrolatum, zinc, boric acid, and camphor, with traces of a tarry oil. Analysis of the "Vegetable Wonder Soap" showed it to be a cold-process cocoanut oil soap. Both products falsely and fraudulently advertised. Fine, $40 and costs.—[*Notice of Judgment No. 5560.*]

Humphreys' Pile Ointment Witch Hazel Oil (Compound).—Shipped by Humphreys' Homeopathic Medicine Co., New York City. Analysis showed the preparation to be essentially a camphor ointment on a lard base. Falsely and fraudulently advertised. Fine, $25.—[*Notice of Judgment No. 5635.*]

Hill's Honey and Tar Compound.—Shipped by Laurence E. Cash, who traded as the New York Drug Concern, New York City. Analysis showed the product to consist essentially of water, alcohol (7.9 per cent.), sugars (56 per cent.), menthol, thymol, and a small amount of a substance similar to oil of tar. Falsely and fraudulently advertised. Fine, $25.—[*Notice of Judgment No. 5701.*]

"La Franco Combination Treatment" and "La Franco Vitalizer No. 200."—Shipped by Charles E. Luburg, who traded as La Franco Medical Co., Philadelphia. "La Franco Combination Treatment" included "Female Pills No. 2," "Blood and Emmenagogue Remedy," "Antiseptic Douche Powder," and "Tea Tablets." Analysis showed the "Female Pills No. 2" to consist essentially of aloes, emodin and green vitriol, with indications of ergotin and a trace of crude drug. The "Blood and Emmenagogue Remedy" was essentially iron, quinin, strychnin, and phosphate. The "Antiseptic Douche Powder" was essentially boric acid, borax, alum, carbolic acid and oil of peppermint. The "Tea Tablets" consisted essentially of milk sugar, oil of pennyroyal, iron and manganese oxids, and probably a small amount of caramel. The "Vitalizer No. 200" consisted essentially of iron, manganese, zinc, arsenic, phosphate, phosphid, and strychnin. All were falsely and fraudulently advertised. Fine, $75.—[*Notice of Judgment No. 5820.*]

4. The "Nature's Creation" humbug was exposed by the Propaganda department of The Journal March 5, 1910, and further articles appeared Feb. 4, 1911, and March 30, 1912. The matter is reprinted in the pamphlet. "Consumption Cures," published by the American Medical Association, price 20 cents.

Correspondence

"RULE AS TO PRIVILEGED COMMUNICATIONS APPLIED TO ROENTGENOLOGIST"

To the Editor:—In The Journal, Dec. 10, 1918, p. 2019, there is an abstract of a recent decision of the Idaho Supreme Court, wherein the law of privileged communications is applied to a roentgenologist, in a suit to recover damages for personal injury. This decision must have a far-reaching influence and should be brought to the notice of the entire medical profession. It points out that roentgenology should be applied only by licensed physicians, because the laws regarding privileged communications (where such laws exist) apply only to communications made to or information elicited by attorneys, clergymen or physicians. If the roentgen examinations, in the case cited, had been made by a layman, the supreme court would have reversed the decision of the trial court. In fact, the decision of the trial court would have been entirely different, in this particular phase of the case, if the roentgen examinations had been made by a layman. Besides the bearing this decision may have in the type of case cited, it might and could have a very important effect in a suit against a physician for malpractice, a subject well worth considering when roentgenologists or other specialists are brought into a case in consultation.

I. S. Trostler, M.D., Chicago.

"A REGISTRATION FEE FOR PHYSICIANS"

To the Editor:—In renewing my subscription, I wish to register my protest against the yearly registration of physicians with a fee of $2, as advocated by Mr. Shepardson (The Journal, Nov. 16, 1918, p. 1629). Three or four times that same article came to me, with increasing contempt and disgust on my part. Finally it found space in The Journal, and then came an editorial seemingly approving the scheme.

No doubt Mr. Shepardson believes that the medical profession would be much better under his immediate control, as he says that opposition will come from the more ignorant. I have no doubt that the kaiser thought the world would be better under his control, and the people were very ignorant for not seeing that. I am glad that I was one that was ready to sacrifice anything rather than bow to the kaiser, and I am glad to belong to that ignorant class from which Mr. Shepardson looks for opposition. Every physician and surgeon with whom I have talked belongs to the same class. Our county medical society has condemned the scheme. Some of these prominent men have a faculty for getting laws passed to suit them for which the benefit is not shown to every one. I remember with what contempt the man pushing the present birth registration law remarked that no

physician would contend for a 25 cent fee on a paper on which he has spent two dollars' worth of work. Perhaps we would all despise a 25 cent fee if we held a state job; but now I find not only the fee gone but also the work; and expenses are greatly increased. For instead of sending in my birth reports to the county clerk at the end of the month, I have from six to twelve different men, any of whom may change office every year, to whom to make reports requiring at times telephone fees and extra postage. Is it any wonder that the officials are calling on their "registrars" for more complete reports?

During the recent epidemic I was getting only about two hours' rest out of the day; but enough official notices and instructions came to keep a man busy two or three hours more. I protest against this registration as only another step in making the physician a dummy in the hands of the powers. I have no use for the quack; but must the entire profession be under guard on account of a few renegades? Incidentally, a two dollar fee is attached which over the entire state would amount to from $10,000 to $15,000. "To a man up a tree" it looks as if the moral to the whole thing is that some one needs a soft job riding over the country to see if the physicians are following the latest "goose step."

BLAIR KELLY, M.D., Ferris, Ill.

To the Editor:—The paper of Mr. Francis W. Shepardson (THE JOURNAL, Nov. 16, 1918, p. 1629) touches on matters of vital importance to every public spirited citizen as much as to physicians. While a lamentable state exists in the presence of charlatans in the community, the significance of this is not likely to be fully appreciated.

To go to the root of the matter requires a delicate discrimination, because criticism as usually made strikes as hard at the man as it does at his professional attainments. This sort of criticism is not only unjust but is useless. Medicine, in the last analysis, is what the country as a whole makes it. It is the barometer of progress. Going even farther: in communities the kind of medical service received depends largely on demand. If the demand is for a high degree of professional attainment, this demand is usually met. It follows as a corollary that highly cultivated communities have as a rule highly skilled medical advisers, and the contrary is true, that medical skill is apt to be of a low order in communities where this demand is absent. May it not be at times very difficult to differentiate, judging by results, the charlatan from the licensed practitioner? One recalls Osler's quip that the worst thing about quackery is that it sometimes cures. Sick humanity is not discriminating as to means; are we very sure that professional incapacity is not the chief asset of the charlatan?

An opportunity has fallen to me which has brought close professional contact with numerous physicians, from all states and of all degrees of education. The resultant impression of the average skill, knowledge and judgment of the practitioner is not a source of happiness to me. Man that he usually is, with a heart in the right place, too often he knows little or nothing about medicine. When, in examining general practitioners with a view of ascertaining capability to care for ordinary sickness, it becomes necessary to exclude questions on the signs differentiating mitral stenosis from aortic regurgitation, and pneumonia from pleural effusion because too many have found these difficulties insurmountable, it is bad; but when one finds general practitioners of alleged experience who have never given diphtheria antitoxin, have never seen it given, have never made exploratory puncture of the chest with a needle for fluid, have never done a lumbar puncture nor seen one done, then one becomes convinced that these practitioners have not recognized the clinical pictures they undoubtedly have seen. That such men are inefficient and a menace is not by any means always their own fault. They attended poor schools, supposing them good. Their internships were, perhaps, under inefficient men, and they were taught nothing.

[These statements, of course, will not apply to the physicians who have been or are being graduated under the greatly improved conditions now prevailing in all but a few of the medical schools. Frequently published classifications enable the student to make a wiser choice, and the higher entrance requirements, better laboratory and clinical facilities and greatly improved methods of teaching insure the turning out of physicians who have had a much better medical training than formerly.—ED.]

Experience avails little unless there is some mode of correcting mistakes. If we fail to recognize these deplorable conditions we shall fail also in providing means for a better state of things. It is not enough that students be taught sound principles in schools; equally necessary is it that they have served as interns in hospitals under competent masters. Medical skill is like music: it is acquired more by tradition, master to pupil, than from literature. From the community point of view, the eight states which require an internship in an *inspected* and *approved* hospital as a requisite have the only rational system of licensing.

Mr. Shepardson says we need organization. We do. We need first a clear statement of the object to be attained by organization. That object is not primarily any position of the profession of medicine. The primary object is public health. Each step toward success will bring to medicine honors sufficient. We know that much disease is preventable, yet as a body we hardly have made ourselves felt in putting into operation principles demonstrated and accepted. We have a federal health service, most states have health boards, and a few are subdivided into districts; but there is little or no interrelationship between these boards, and between the isolated practitioner and these several agencies no relation at all. Yet these are, in fact, the great servants of the state health officer. From these he should receive help on the one hand in preventing disease and on the other in caring for disease (sanitary inspections, state and district laboratories, hospitals and sanatoriums). If the isolated physician is not kept in touch with medical progress through these agencies, his lot is hopeless, for he has neither time nor money for postgraduate study away from home.

NELLIS B. FOSTER, M.D., Fort Oglethorpe, Ga.
Lieutenant-Colonel, M. C., U. S. Army.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COCA-COLA

To the Editor:—Has "Coca-Cola" been analyzed? If so, I would especially like to know whether there is anything particularly injurious in it, and whether it is a habit-forming drink.

R. F. GRAHAM, M.D., Greeley, Colo.

ANSWER.—An analysis of Coca-Cola made by the federal chemists is published in a government bulletin known as Notice of Judgment No. 1455. This analysis declares the stuff to contain from 0.92 to 1.30 grains of caffein to the fluidounce. Various analyses have also been published in the advertising matter of the Coca-Cola Company. These all admit the presence of caffein in various amounts. It would seem that, in the interests of the public health, the indiscriminate sale to children and adults of an alkaloid like caffein in the enticing form of a "soft drink" should be deprecated. It is difficult to avoid the conclusion that the unrestricted use of Coca-Cola must be deleterious. It is probably true that a carefully graded dose of Coca-Cola contains no more caffein than the average cup of coffee, and if Coca-Cola as a drink were subject to the same limitations, so far as availability is concerned, there might be but little danger in its use. But people do not drink from five to fifteen or twenty cups of coffee daily. That they do, in some cases, drink an amount of Coca-Cola equivalent in caffein content to that amount of coffee daily can, we believe, be substantiated. In THE JOURNAL, June 6, 1914, p. 1828, is published a communication from a Colorado physician describing a case of asthenopia in a caffein addict who was taking from three to six glasses of Coca-Cola daily in addition to two or three cups of strong coffee at mealtime.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALASKA: Juneau, March 4. Sec., Dr. L. P. Dawes, Juneau.

CONNECTICUT: New Haven, March 11-12. Sec. Reg. Bd., Dr. Chas. A. Tuttle, 196 York St., New Haven; Sec. Eclectic Bd., Dr. J. E. Hair, 730 State St., Bridgeport, and Sec. Homeo. Bd., Dr. E. C. M. Hall, 82 Grand Ave., New Haven

ILLINOIS: Chicago, March 3-5. Mr. F. C. Dodds, Supt. of Registration, Springfield.

INDIANA: Indianapolis, Feb. 26-28. Sec., Dr. W. T. Gott, 84 State Capitol Bldg., Indianapolis.

KANSAS: Topeka, Feb. 11. Sec., Dr. H. A. Dykes, Lebanon.

MASSACHUSETTS: Boston, March 11-13. Sec., Dr. W. P. Bowers, Rm. 501, No. 1 Beacon St., Boston.

MISSOURI: St. Louis, Jan. 28-30. Sec., Dr. G. H. Jones, State House, Jefferson City.

NEBRASKA: Lincoln, Feb. 12. Sec., Dr. H. J. Lehnhoff, 514 First Natl. Bank Bldg., Lincoln.

NEW HAMPSHIRE: Concord, March 13-14. Sec., Dr. Charles Duncan, Concord.

NEW YORK: Jan. 28-31. Albany, Buffalo, New York City and Syracuse. Mr. Herbert J. Hamilton, Asst. Prof. Exams., New York Dept. of Education, Albany.

VERMONT: Burlington, Feb. 11. Sec., Dr. W. Scott Nay, Underhill.

WYOMING: Moorcroft, Feb. 12-14. Sec., Dr. H. E. McCollum, Laramie.

New York May and June Examinations

Mr. George M. Wiley, director, Examinations and Inspections Division, reports the written examinations held at Albany, Buffalo, New York and Syracuse, May 21-24 and June 25-28, 1918. The examinations covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 276 candidates examined, 220 passed and 48, including 1 osteopath, failed, 8 of the candidates who failed at the May examination having passed at the June examination. The following colleges were represented:

College	PASSED	Year Grad.	No. Licensed
Howard University		(1917)	1
Rush Medical College		(1917)	1
Bowdoin Medical School		(1917)	1
Johns Hopkins University		(1914) (1917, 2)	3
University of Maryland		(1916) (1918)	2
Harvard University		(1915)	1
Tufts College Medical School		(1912) (1913) (1917, 2)	4
University of Michigan Medical School		(1916)	1
Albany Medical College		(1917, 4) (1918, 7)	11
Columbia University		(1916, 3) (1917, 8) (1918, 22)	33
Cornell University		(1917, 5) (1918, 14)	19
Fordham University		(1917) (1918, 6)	7
Long Island College Hospital		(1917, 5) (1918, 25)	30
New York Homeopathic Medical College and Flower Hospital		(1916) (1917, 3) (1918, 11)	15
New York Med. College and Hospital for Women		(1918)	3
Syracuse University		(1913) (1917) (1918, 23)	25
University and Bellevue Hosp. Med. Coll.		(1916) (1918, 26)	27
University of Buffalo		(1918)	22
University of Oklahoma		(1916)	1
Jefferson Medical College		(1917) (1918)	2
Medico-Chirurgical College of Philadelphia		(1911)	1
University of Pennsylvania		(1908) (1911) (1917)	3
Vanderbilt University		(1916)	1
University of Texas		(1916)	1
University of Vermont		(1917) (1918)	2
Medical College of Virginia		(1917)	1
Queen's University		(1913)	1
Licentiate of the Royal College of Physicians, London, and Licentiate and Member of the Royal College of Surgeons, England		(1910)	1
	FAILED		
Atlanta Medical College		(1914)	1
College of Physicians and Surgeons, Chicago		(1902)	1
Illinois Medical College		(1898)	1
Kansas Medical College		(1903)	1
University of Louisville		(1902)	1
College of Physicians and Surgeons, Baltimore		(1914)	1
Boston University		(1915)	1
Tufts College Medical School		(1918)	2
Albany Medical College		(1914)	1
Columbia University		(1918)	2
Eclectic Med. Coll. of the City of N. Y.		(1910)	1
Fordham University		(1913) (1917) (1918)	3
Long Island College Hospital		(1918)	2
New York Homeopathic Medical College and Flower Hospital		(1912) (1916) (1918, 7)	9
Syracuse University		(1917)	1
University and Bellevue Hospital Medical College		(1918)	2
University of Buffalo		(1918)	3
Jefferson Medical College		(1899) (1904)	2
University of Pennsylvania		(1917)	1
Woman's Medical College of Pennsylvania		(1915) (1918)	2
Medical College of the State of S. C.		(1911)	1
Medical College of Virginia		(1915) (1917)	2
Queen's University		(1916) (1917)	2
McGill University		(1915)	1
University of Greigswald		(1895)	1
University of Palermo		(1905)	1
University of Turin		(1892)	1

Arizona October Examination

Dr. Allen H. Williams, secretary of the Arizona Board of Medical Examiners, reports the oral and written examination held at Phoenix, Oct. 2-3, 1918. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 15 candidates examined, 10 passed and 5 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgia College of Eclectic Medicine and Surgery		(1916)	75.2
University of Michigan Medical School		(1908)	86.5
Barnes Medical College		(1893)	88
Washington University		(1901)	95
Cornell University		(1905)	94
Syracuse University		(1887)	80
Jefferson Medical College		(1884)	88
University of Pennsylvania		(1900) 89.4; (1916)	89.3
Vanderbilt University		(1898)	77
	FAILED		
Southern Homeopathic Medical College and Hospital		(1903)	46.3
Detroit College of Medicine and Surgery		(1916)	57.8
Northwestern Medical College		(1894)	68
Washington University		(1912)*	19.5
Memphis Hospital Medical College		(1898)	64

* An official statement says that this candidate was neither a student nor a graduate of the school named.

New Mexico October Meeting

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports that 6 candidates were licensed on credentials at the meeting held at Santa Fe, Oct. 14-15, 1918. The following colleges were represented:

College	LICENSED ON CREDENTIALS	Year Grad.	No. Licensed
College of Psysicians and Surgeons, Chicago		(1908)	1
University of Illinois		(1913)	1
St. Louis College of Physicians and Surgeons		(1883)	1
St. Louis University		(1913)	1
Washington University		(1901)	1
Medical College of Ohio		(1876)	1

Oklahoma October Examination

Dr. J. J. Williams, secretary of the Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, Oct. 8-9, 1918. The examination covered 10 subjects and included 100 questions. An average of 70 per cent. was required to pass. Two candidates, 1 an osteopath, were examined, both of whom passed. Six candidates, including 1 osteopath, were licensed through reciprocity. Three candidates were granted reregistration licenses. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Baylor University		(1917)	71
College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Atlanta College of Physicians and Surgeons		(1909)	Texas
St. Louis University		(1906)	Missouri
University of Pennsylvania		(1917)	Kansas
Dallas Medical College		(1904)	Texas
School of Medicine of Nuevo Leon, Mexico		(1891)	New Mexico

Kentucky December Examination

Dr. J. N. McCormack, secretary of the State Board of Health of Kentucky, reports the written examination held at Louisville, Dec. 3-5, 1918. The examination covered 10 subjects and included 100 questions. An average of 70 per cent. was required to pass. Of the 6 candidates examined, 5 passed and 1 failed. Two candidates, previously examined, are now recorded as having passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Louisville		(1912) 75, 90; (1917)	76
St. Louis College of Physicians and Surgeons		(1918)	80
Meharry Medical College		(1917) 70, 80; (1918)	78
	FAILED		
Meharry Medical College		(1918)	53

Book Notices

THE BEGINNING OF SCIENCE, BIOLOGICALLY AND PSYCHOLOGICALLY CONSIDERED. By Edward J. Menge, M.A., Ph.D., M.Sc., Professor of Biology in the University of Dallas. Cloth. Price, $2 net. Pp. 256. Boston: Richard G. Badger, 1918.

In this booklet the author endeavors to explain the relationship between philosophy and laboratory science. Six of the chapters have appeared in the University of Dallas quarterly bulletins. The discussions are so advanced that they will appeal only to adults, or at least to those beyond high school age. As a whole, the book forms a brief review of the present status of biology and scientific philosophy. The author is careful to present both sides of the subjects he discusses. His chapter on theories of evolution is an excellent presentation of the developments in this field.

SURGERY AT A CASUALTY CLEARING STATION. By Cuthbert Wallace, C. M. G., F.R.C.S., Surgeon, St. Thomas' Hospital, and John Fraser, M. C., F.R.C.S.E., Assistant Surgeon, Sick Children's Hospital, Edinburgh. Cloth. Price, 10 shillings, 6 pence. Pp. 320, with 63 illustrations. London: A. & C. Black, Ltd., 1918.

The great war has developed a new terminology. Probably few readers of THE JOURNAL have a clear idea exactly what a British casualty clearing station is. The military hospital has evidently followed the same line of development in the British army as in the American. Prior to the South African war, the British military hospital equipment consisted of the field hospital and the base hospital. The field hospital was a mobile unit attached directly to the division, going forward with the troops in the field, planned and equipped so as to be capable of quick erection and demolition, and of as rapid movement as the exigencies of the military situation might require. To it were brought the wounded from the regimental aid station and the ambulance dressing station, either on foot or in ambulance or by the litter squad of the ambulance company. The field hospital contains no cots, beds for the wounded being made with blankets on top of straw, hay or leaves, or lacking these, rubber blankets on the ground. Only the imperatively necessary operations of emergency are done. Dressings are changed and adjusted, hemorrhages checked, splints applied, nourishment and stimulants administered and, as rapidly as possible, the wounded are evacuated toward the rear and the field hospital emptied and prepared for another influx of patients. When the zone of the advance is near the base of supplies, patients from the field hospital can be evacuated directly into the base hospital, which is a practically immobile unit; but when, as in Africa, and later on in France, the line of communication involves from 100 to 150 miles of rail and from 10 to 20 miles of motor transportation, the gap between the field hospital and the base hospital is too wide for practical purposes. Hence the evolution during the Boer war with the British, and during the Mexican border activities in our army, of what is known in this country as the evacuation hospital and in England as the casualty clearing station—an intermediate unit less mobile than the field hospital and more mobile than the base hospital; situated generally at the rail-head, receiving the evacuated wounded from two to half a dozen field hospitals; more completely equipped and capable of rendering more extended service than the field hospital, yet continually evacuating to the base hospital by hospital trains the sick and wounded whose condition is too serious to permit of their being returned to active duty in a short period. When the interval between the rail-head and the front lines is too small to make a field hospital necessary, the evacuation hospital becomes the first link in the system, and receives the wounded direct by ambulance from the advanced dressing stations. So recent has been the development of this military medical unit that comparatively no literature on the subject was in existence prior to the European war. This book embodies the results of several years' experience on the western front, and comprises the observations and methods of a large number of army surgeons. Chapters on organization, shock, general treatment, antiseptics, injuries of bones and joints, abdominal and chest wounds, injuries to the head, spine and nerves, hemorrhages, gas gangrene, amputations, transfusions, injuries to the eyes, and tetanus cover practically all the essential features of the work of the casualty clearing stations. The book is copiously illustrated with drawings and diagrams, mostly of recently devised apparatus and instruments. Being made up practically of new material, it has a freshness and interest not generally found in surgical textbooks. The military surgeon will be interested in the experiences of his professional brother on the western front, while the surgeon in civilian practice can get many valuable hints as to methods, the improving and devising of apparatus, etc.

Social Medicine, Medical Economics and Miscellany

The Black Demon, or Exorcising Smallpox

In a publication of the American Baptist Foreign Mission Society, Dr. Charles R. Manley, of the Clough Memorial Hospital, Ongole, South India, describes graphically the ceremonial of the natives of a community in driving out an epidemic of black smallpox. It should make good reading for the antivaccinationists. Dr. Manley's story is as follows:

The tom-toms beat all night and this morning the streets are fairly covered with chicken feathers. For black smallpox has taken the city and must be driven out. The priests have told the people to kill chickens and strew their feathers in the streets so they will catch the eye of Polerimah, the plague demon, and distracts her attention. The tom-toms throbbing in the air will either frighten her or please her so much that she will forget to jump down the throats of any careless mortals whom she might find with mouths opened in speaking, or with lips parted, or sleeping with uncovered faces. Yes! the goddess Polerimah is angry with the people.

Yesterday afternoon they made a big *tamasha*, or feast, in her honor. A few of us foreigners heard that it was to take place and went down to the bazaar to see what we could see.

In the very heart of the bazaar, our native servants told us, we should find Polerimah in all her glory. We wedged our way through the masses of men and women who filled the place and found ourselves at last before the little hut of green reeds that had been erected over the goddess. I must confess I was surprised and disappointed at what I saw when I peeped in. After all the fuss they had made and the huge pile of rice they had heaped up as an offering, I expected to see at least a life-sized lady demon. But instead I saw only a squat little figure, no more than a foot tall, made of black mud and covered with tinsel. She was soaked with lemon-colored water which dripped off her shoulders into a widely spreading puddle round her feet.

"Why so much wetness?" I asked with an amused smile.

"They must keep her cool," answered our guide with great dignity. "If she gets warm she gets mad. So they have built this temple of reeds to protect her from the sun, and every few minutes the priests pour saffron tinted water over her. Whatever happens she must be kept cool."

. . . . . .

In front of the "wickie-up" was a constantly increasing pile of cooked rice awaiting its sprinkling of life-blood to make it a food fit to satisfy the ravenous and blood-thirsty appetite of the goddess. Just beyond the rice-pile we could see a priest sitting on the ground bending over a smudge pot of burning incense. At that moment he turned to look at us and the terrible shape of his countenance made us cringe. His eyes were blood red and swollen and his sensuous mouth hung open. He was waiting for the demon to leap through the smoke and down his throat.

"Then," said our guide, "when he is demon-possessed, he will speak, and whatever he says the people will do it."

. . . . . .

We watched for a while the delegations of men and women coming from different parts of the town, bringing their offerings to Polerimah. With the blare of horns, the throb of tom-toms, the cries of the frantic wild-eyed dancers, band

after band came in unvarying march around the little hut-temple, presenting their offerings and augmenting the rice pile. The priests meanwhile fought among themselves for the various titbits and dainties that the more zealous women had brought with their rice. The scene began to take on the aspects of a dog-fight as the priests, getting more excited, snarled and snatched delectable morsels from the women and even from one another. Hearing a commotion behind us we turned to see a band of priests coming up on the run, leading a buffalo bull. He was dyed with saffron, a wonderful canary yellow, and hung with garlands and with flowers. Behind him came a huge, savage black-faced fellow, holding aloft a great sickle-shaped knife in a hand that was white as snow.

"The bull is another offering," muttered my guide in my ear. "The big priest with the white hand must strike off his head with a single blow of the knife, and then the blood must be sprinkled all over the sacred rice pile before the goddess will accept her feast."

. . . . . .

By this time the sun had slid pretty well down toward the horizon, and it was evident that something more was about to happen. A sudden yell was followed by a mad surging of the crowd toward the temple, which they tore to pieces in almost less time than it takes to tell it. In another instant every one was waving a reed in the air.

"Now what will they do?" we asked.

"They are arranging to escort the goddess out of the town," said our guide. "They have done everything they could to appease her anger and make her happy; and now they are going to carry her out of town while she is still in a happy frame of mind, and throw her in the ocean."

The procession was formed. First came the priest carrying on his head a basket in which were the bull's entrails, crowned by his head, holding in his hideous, grinning mouth the bone of his front fore-leg. Behind him came the goddess, carried on the head of another priest. And as the throng proceeded down the street, people by the wayside wrung the necks of chickens and threw the headless bloody bodies over the people's heads toward the image. The horns blew, the tom-toms throbbed and the people yelled themselves hoarse, waving their reeds in the air. What is the priest screaming?

"Yell, brother, yell. Let confusion reign! Let not the terrible Polerimah suspect our fell designs, and fall upon us before we are safely rid of her!"

Following in the wake of the procession, I came up to a young mother who was hurrying along dragging a tiny child by the hand. The little girl was staggering, her bare body was a mass of scars, her eyes heavy and dull with the intoxication of the dread disease. The child mother cried out to Polerimah to have mercy. As her wails mingled with the shrieks of thousands the procession passed down the crooked, dusty road and out of sight.

Tonight, out there in the dark somewhere, many young mothers are sitting in black despair, because in spite of all their sacrifices to the demon, the lives of their babies stricken with the fearful plague are surely ebbing away.

Dried Milk as a Food for Infants

A report of great importance has been made to the Local Government Board by Dr. F. J. H. Coutts on dried milks with special reference to their use in infant feeding and issued as a government publication. Dr. Coutts says that the experience of the last twelve or fourteen years shows that dried milk is one of the most satisfactory forms of cow's milk for the feeding of infants. It has been largely employed in connection with infant welfare centers, particularly in Leicester and in Sheffield. A large proportion of babies take and digest dried milk very well; they thrive on it and develop well. Vomiting is less frequent with dried milk than with ordinary cow's milk. Fresh, clean, pure, raw cow's milk is a very good food for a baby when mother's milk is not available, but unfortunately the milk ordinarily sold in towns is often far from clean and contains large numbers of germs. Such milk, especially in summer, will not keep a day without becoming sour, and is apt to cause digestive troubles. Dried milk contains far fewer germs than ordinary town milk, and is less likely to contain the germs of infectious diseases. Also germs do not multiply in dried milk as they do in ordinary milk. Dried milk keeps well so long as it is kept dry. Only as much should be made up at a time as is required for one feed, and there need, therefore, be no waste. Pasteurized, sterilized or boiled cow's milk are useful foods if properly prepared, but they have disadvantages as compared with dried milk. Unsweetened full cream condensed milk is also useful for baby feeding, but when mixed with water in the proportions sometimes recommended it is too weak for satisfactory nourishment. Sweetened condensed milk is often used for baby feeding. Dried milk has the advantage, when made up with the proper proportion of water, of containing the essential food elements in a proportion more suitable than full cream sweetened condensed milk. The latter, if made up so as to give the right proportion of fat, has a very excessive amount of sugar. The baby usually becomes fat and flabby, and is liable to suffer from diseases, such as rickets These risks attach to other infant foods containing excess of sugar. So-called "malted" milks, like sweetened condensed milks, contain much too low a proportion of fat as compared with sugar. They differ from sweetened condensed milk in the nature of the sugar. In condensed milk this is mainly sucrose; in malted milk it is largely maltose derived from the malted cereal. The ordinary patent infants' foods, containing large quantities of unaltered starch, are worse than sweetened condensed milk or malted milk. They are not fit for use for a baby under 7 months.

It is not surprising, therefore, that at official infant welfare clinics dried milk is becoming used to an increasing extent as, on the whole, the most convenient and most suitable food when babies cannot get breast milk. In feeding babies on dried milk, the full cream variety should alone be used. Commencing with 1 teaspoonful of dried milk in 3 tablespoonfuls of water in the first or second weeks of life, it can be rapidly increased to 1½ or 2 teaspoonfuls of dried milk in from 4 to 5 tablespoonfuls of water by the end of the second month, and so on to 5 teaspoonfuls of dried milk in 10 tablespoonfuls of water at the age of 5 or 6 months. Fears were at one time expressed that the use of dried milk might result in scurvy or rickets. Prolonged experience at infant welfare centers has refuted this; but as an extra precaution to avoid the possibility of scurvy, particularly if dried milk is to be used for a long time, a little fruit juice, such as orange or grape juice, may be given once or twice a week. Dried milk is also a valuable food for nursing mothers. In a very large number of towns dried milk for baby feeding is supplied from infant welfare centers, at which advice is also given as to the method of preparing and using the food.

Massage Versus Gymnastics in Rehabilitating the Crippled

Hitherto chief reliance has been placed on massage to set free stiff joints and limbs—a most valuable and helpful agent when rightly applied. Devoted women have given themselves up to the carrying on of this work, and most admirable results have often been obtained; but with every desire to appreciate their work, and with no desire to belittle its value, one has had forced on one's mind sundry factors that indicate limitations in its utility. The ordinary medical man who orders massage for a patient knows nothing from personal experience of the methods employed, or of the results obtained or obtainable. He hands the patient over to the "massage department" with smug satisfaction that he has done his duty in an up-to-date fashion, and troubles no more about the matter. The massage is carried out, as a rule, by a woman who knows nothing but massage and perhaps a little electricity, and her horizon being thus limited, she will continue massaging a case most assiduously and devotedly when all hopes of gaining improvement thereby have long ceased. Often one has seen hopelessly ankylosed joints being rubbed to regain movement, and limbs with divided and unsutured nerves being similarly treated. It is pathetic to see a little but devoted masseuse struggling with a strong man's stiff shoulder held by powerful muscles; to get the patient's weight to act on the arm would do more toward regaining movement

in five minutes than five months of massage. To get good results the patient's own will must be brought into action. There are no particular inducements for the fighting man to get well more quickly than he can help; the allurements and comforts of the trenches are not such as to urge him to rapid convalescence, and he is quite ready to go on being rubbed or having passive movements of limbs at the hands of a masseuse, or in the grasp of a machine, as long as may be without himself putting out an ounce of effort to hasten the cure.—Col. A. Carless, Preface to Gymnastic Treatment for Joint and Muscle Disabilities.

Medicolegal

"Clairvoyant Doctor" an Illegal Practitioner

(People v. Kenyon (Mich.), 167 N. W. R. 997)

The Supreme Court of Michigan says that in this case, wherein the jury returned a verdict of guilty on a charge against the defendant of practicing medicine without a license, and which case was before the supreme court on exceptions before sentence, the court was unable to find error in the record which would warrant a reversal of the case, and therefore affirmed the conviction and directed the trial court to proceed to judgment. The prosecution showed that the defendant was not registered in Eaton, Calhoun or Barry counties as a physician, and also introduced the testimony of a number of witnesses to the effect that he had not merely furnished medicine, but had given treatments to a number of people in Battle Creek and elsewhere, the treatments consisting principally in rubbing on some sort of salve or oil, and occasionally giving a powder to take internally. Before giving a treatment he would "go into a trance," as the witnesses expressed it, claiming to be under the guidance and control of an Indian spirit, who would talk to him and tell him whether or not he could cure the patient and also what to do to effect the cure. In a number of instances it was shown that he stated positively that he could cure the patients. Those witnesses stated that they had gone to him for medicine or treatment because they had heard him spoken of highly by others whom he had treated; that they had seen no advertisement nor anything with the title "Doctor" used in connection with his name, though they were in the habit of calling him "Dr. Kenyon." During the cross-examination of the defendant, he identified a number of letters written by his wife for him during the years 1913 and 1914 to a Miss Carrie Holmes, which were signed "Dr. Levi Kenyon," the envelops of which bore the return card, "Dr. Levi Kenyon, Bellevue, Mich.," which letters were received in evidence, as was also a printed card which he identified, reading as follows:

Clairvoyant Doctor. I diagnose Cases Anywhere in the United States free of Charge.
Bell Phone 50 3-4 Dr. Levi Kenyon,
R. F. D. No. 4 Bellevue, Michigan.

The defendant endeavored to show that during the period set forth in the information (July 1, 1915, to Dec. 8, 1916) he did not practice medicine and did not hold himself out at all to cure or alleviate human ailments, but simply sold herbs, roots and ointments prepared by himself which might, if used, be of benefit to afflicted human beings; that during the period in question he did not advertise or hold himself out to cure diseases, or in any way violate the section of the statute in question.

The supreme court holds that there was no error in permitting the information to stand without the exceptions of the statute concerning osteopaths, etc., being mentioned, the rule being well established in Michigan that in declaring on a statute where there is an exception in the enacting clause the pleader must negative the exception, but where there is no exception in the enacting clause, but an exemption in the proviso to the enacting clause or in a subsequent section of the act, it is a matter of defense, and must be shown by the defendant. The court also holds that, the defendant having testified, on direct examination, that he had never held himself out as being a physician or a surgeon, it was not error to allow cross-examination of the defendant and the introduction thereon of exhibits mentioned, the introduction of the letters as being on his credibility. Furthermore, in view of the statement made by the defendant while on the stand in his direct examination that he had never diagnosed a case of any person coming to him, and that he had never made a fixed charge for his remedies, the court does not think error was committed in allowing the witness Carrie Holmes to relate as part of the direct case circumstances that occurred at the time the letters to her were written.

Things Wanting to Sustain Action for Fees

(Paine v. Eckhardt et al. (Texas), 203 S. W. R. 459)

The Court of Civil Appeals of Texas reverses a judgment for $500 obtained by the plaintiffs in this action for debt brought by two practicing physicians, because the contention of defendant Paine must be sustained, that the judgment was contrary to and unauthorized by law, in that both the pleadings and the evidence failed to show that the plaintiffs, or either of them, had complied with the requirements of law, and especially with the provisions of Article 5736 of Vernon's Sayles' Civil Statutes, in that the pleadings failed to allege, and the evidence to show, that the plaintiffs, or either of them, had complied with the statute regulating the practice of medicine. The court holds that it was also fatal to the plaintiffs in this case that the pleadings and the evidence did not show any copartnership or other interest of the plaintiffs in the right to compensation of the other by which they could maintain or recover on a joint cause of action.

Color Blindness Not Loss of Sight

(Kane v. Brotherhood of Railroad Trainmen (Neb.), 168 N. W. R. 598. Routt v. Brotherhood of Railroad Trainmen (Neb.), 168 N. W. R. 599)

The Supreme Court of Nebraska reverses in these two cases judgments obtained by the plaintiffs on account of color blindness as for a complete and permanent loss of sight. Moreover, for reasons stated in the Kane case, the court, in the Routt case, considered on a rehearing, overrules its former decision holding color blindness to be such loss of sight (101 Neb. 763, 165 N. W. R. 141).

The court now holds, as stated in the Kane case, that one who is color blind, but whose vision in other respects is unimpaired, has not suffered "complete and permanent loss of sight of both eyes." The fact that the plaintiff was a railroad trainman, and on account of color blindness was discharged from his employment, did not entitle him to recover the amount payable under a provision of a benefit certificate that a member of the organization in good standing, "who shall suffer the complete and permanent loss of sight of both eyes, . . . shall be considered totally and permanently disabled"; there being no provision that the term "totally disabled" should mean "totally disabled" from following railroad work.

The court says that the constitution of the defendant provided that a beneficiary member of the class to which the plaintiff belonged in good standing "who shall suffer the complete and permanent loss of sight of both eyes . . . shall be considered totally and permanently disabled, but not otherwise, and shall thereby be entitled to receive, on furnishing sufficient and satisfactory proofs of such total and permanent disability, the full amount of his beneficiary certificate." The majority opinion in the Routt case held, in substance, that the language of the contract was ambiguous, and that a member of the association who was unable longer to continue in train service, and was discharged therefrom, on account of color blindness, had suffered a complete and permanent loss of sight of both eyes, within the meaning of the contract. But the defendant, by its constitution, insured only against death and against certain specified disabilities. It made no provision to insure against the multitude of other classes of injuries which a member might sustain, and which might equally incapacitate him from carrying on his work, and was therefore not avocational insurance.

The evidence showed that the plaintiff's sight was perfect except that he was unable to distinguish certain colors. In the ordinary use and meaning of language, when one has suffered the complete and permanent loss of sight of both eyes, he is totally blind. It is true that ambiguous expressions in an insurance contract should be construed most strongly against the insurer, because it writes the contract; but where there is no ambiguity, and the plainest and clearest of ordinary language is used, courts are not warranted in striving to give distorted and unusual meanings to words in order to reach what is believed to be a benevolent result. Furthermore, the defendant's constitution specified that its provisions should be "interpreted and construed according to their most plain and obvious meaning." In order to bring the plaintiff within the insured class there must be a complete perversion of the usual and ordinary meaning of the language employed.

Society Proceedings

WESTERN SURGICAL ASSOCIATION

Twenty-Eighth Annual Meeting, held in Chicago, Dec. 20 and 21, 1918

The President, Dr. James F. Percy, Galesburg, Ill., in the Chair

Our Duty to the Industrial Army

Dr. R. W. Corwin, Pueblo, Colo.: Our duty as surgeons to the industrial army may be considered under two heads: (1) treatment after injury, and (2) treatment before injury —surgical prophylaxis. What are some of the prophylactic duties of the surgeon? In a broad sense to educate the employee; obtain the endorsement of the employer; urge national and state cooperation; make known the laws of eugenics, and insist that the breeding of man is as important as the breeding of cattle. Specifically, we should teach first aid, surgical hygiene and sanitation. We should teach the nature of wounds, the process of wound healing and of wound poisoning, the importance of early attention, and the relation of health to wounds. We should teach the relation of venereal diseases to wounds, and the importance of not bandaging tightly, of the care of the feet, of properly fitted shoes, and of position in lifting so as to prevent sacro-iliac injuries. The industrial army demands surgical protection as well as surgical treatment. Are we not to protect as well as save? Is not the surgeon best qualified to satisfy this demand? Has not the surgeon been too modest and permitted others to occupy his territory? Is it not time for the surgeon to assert his rights? Is not his duty to the industrial army plain? Now that peace is here, let us become instructors, not for war but for work.

DISCUSSION

Dr. D. S. Fairchild, Sr., Clinton, Iowa: I have examined about 16,000 men for army service and 5,000 for railroad service, and my conclusions are that we need to inquire first into the ways of living. If every industry could establish a plan of examining the men received into service and then ascertain how these men live, we would have something to go on in judging how to improve conditions. In our state 20 per cent. of the men rejected because of physical disability were under 30, and over that age more than 30 per cent. were rejected, or about the same as the men for railroad service. It was thought that on account of war conditions it might be necessary for our railroad people to employ men who would not be accepted under ordinary conditions, and I took the opportunity of visiting the homes where many of these men lived, the older men who would not be taken under ordinary conditions. I found the homes filthy and vice prevailing to a large extent. If we could start out with a plan of physical examination and follow this up by finding out how these people live, we should know what we must do in order to improve conditions.

Dr. John P. Lord, Omaha: We all realize the great amount of physical disability that has prevented men from being accepted in the military service, and these men are very anxious to have that physical disability removed in order that they might enter the service. The physical requirements are made in the various branches of the military service, and this has intensified the interest of people in their own physical conditions and they have tried to remedy them. Nurses ambitious to enter the nursing service would seek to have foot defects relieved so that they could get into service. If large corporations exact these things, and many of them do, the individuals are going to see to it that they are made fit for their jobs.

Dr. George N. Kreider, Springfield, Ill.: I have examined 800 medical men and have been very much surprised to find a large proportion handicapped and unable to get into the service on account of overweight. When I told them that it was possible to lose that weight and fit themselves for the service, at least 70 per cent. undertook to do it. Bad shoes are responsible for gastroptosis, heart trouble and many other conditions, and it is important for a surgeon to bear this in mind and lend his assistance to every effort to get better shoes.

Surgical Treatment of Exophthalmic and Thyreotoxic Goiter, with Special Reference to Bilateral Resection

Dr. Neil John Maclean, Winnipeg, Manitoba, Canada: The advantages of bilateral resection over unilateral lobectomy with partial lobectomy of the opposite lobe are: 1. There is a minimum of injury to the parathyroids. 2. There is absolute safety for the recurrent laryngeal nerve. 3. If for any reason further removal of the gland should be indicated, the one side could be removed completely with an assurance that some portion of gland remained. 4. Compensatory hypertrophy does not occur after double resection. 5. For cosmetic purposes, in the operation of lobectomy there is a well marked depression on the side from which the lobe has been removed, and on the other side the portion of gland left produces an undue prominence, while in bilateral resection the neck is symmetrical.

Purgation Before and After Abdominal Section

Dr. Henry T. Byford, Chicago: This paper will be published in full in The Journal.

DISCUSSION

Dr. Howard Hill, Kansas City, Mo.: No cathartic is necessary immediately before operation. Many people are chronically constipated and they should receive the proper treatment, but not just before operation. Generally speaking, a person whose bowels have been moving normally up to the time of operation does not need a cathartic at that time.

Dr. C. H. Wallace, St. Joseph, Mo.: I have not been giving cathartics before operation for several years, as my experience teaches me that it is rather harmful. If a patient comes with a history of regular bowel movements every day, he is not given a purgative but an enema the next morning. These patients suffer much less from postoperative vomiting than when purgatives are given before operation.

Dr. A. J. Ochsner, Chicago: I have made a practical study of the use of purgatives before operations for the last thirty-two years. I have tried all of them, from calomel to castor oil, and have come to the conclusion that the principle laid down by the essayist is the correct one. If you give cathartics, you must not give anything that will fill up the intestine again before the operation.

Dr. James F. Percy, Galesburg, Ill.: Some men give an enema about 4 o'clock in the morning, so that the lower bowel is cleaned out at that time. It is not a very agreeable experience.

Empyema

Dr. Emil G. Beck, Chicago: Stereoroentgenograms will corroborate the diagnosis of empyema very early. Aside from operation, repeated puncture and withdrawal of small quantities of fluid may cure empyema. Operation should not be performed in the very acute stages when the fluid is still serous. A few ounces of the fluid may be removed by puncture to relieve distressing symptoms; drainage is to be reserved when the secretion is distinctly purulent, and will furnish about 50 per cent. sediment in twenty-four hours.

Introduction of a catheter through a cannula at the lowest level posteriorly is most desirable. Withdrawal of 2 or 3 ounces daily allowing any air to enter the cavity is the best treatment. I advocate counterdrainage in the lowest part of the cavity anteriorly, passing a catheter through both openings. If resection of a rib is done, it should be the eighth or ninth rib posteriorly. This affords best drainage for the patient sitting, standing or lying down. Local anesthesia is advocated in all cases.

Irrigation with Carrel-Dakin solution is advised for the first few days to dissolve fibrinous adhesions. Further irrigation is discontinued if possible, and spontaneous dry drainage is allowed to follow. Injections of bismuth paste will close from 80 to 90 per cent. of the cases if employed properly. A mixture of oil and bismuth is dangerous because the bismuth subnitrate will settle in the most dependent cervices in a few hours from which it may be difficult to remove, and thus cause bismuth poisoning. The bismuth in a petrolatum mixture will precipitate and thus will not be dangerous.

For the chronic suppurative cases, with sinus or lung abscess or empyema, which have persisted in spite of treatment, the skin sliding flap operation is reserved. It is much easier and less dangerous and more effective than the Estländer and similar procedures.

Surgical Complications in One Thousand and Thirty Cases of Influenza

DR. C. J. ROWAN, Iowa City: These cases occurred in the student body of the University of Iowa during October, 1918. Barrack life of the Students' Army Training Corps was responsible for so many cases among a student population of slightly over 3,000, and permitted an early and close observation of the cases. Empyema was the most important surgical complication. It occurred only in the pneumonia cases, of which there were about 100, and was the cause of death in each of thirty-three fatal cases. Appendicitis was not a common complication. Many patients had the gastrointestinal form of influenza, and in quite a number of these there was finally pain, tenderness, and rigidity localized in the right lower quadrant. This was marked enough in some cases to lead to the diagnosis of acute appendicitis and to have indicated operation in ordinary times; but I felt that it was extremely important to avoid unnecessary operations in these influenza patients, that the involvement of the appendix was only a part of the enteritis of influenza; that recovery would take place unless secondary infection of the appendix occurred, and that secondary infection would be shown by the development of leukocytosis. Two of the patients did develop leukocytosis, and appendectomy was done at once in each case under gas and oxygen anesthesia. Whatever the primary cause of the influenza may be, the bacteria mostly concerned in the complications are pneumococci and streptococci.

Carcinoma of Small Intestine

DR. E. S. JUDD, Rochester, Minn.: In reviewing our records I found five cases of primary carcinoma of the duodenum. In one of these cases a gastro-enterostomy was done for an inoperable obstruction and relieved the patient for a time. At necropsy, several months later, pathologists reported carcinoma of the duodenum extending up to the pylorus. In the second case there was a carcinoma of the pyloric end of the stomach, and beginning just above the pylorus, independent of the pyloric tumor, was a malignant papilloma of considerable size. In the third case, the original tumor was presumably of the first portion of the duodenum, although the ampulla was obliterated, and from the extent of the trouble it was difficult to determine at what point it originated. The fourth case was quite similar to the third, and was an extensive malignancy. The fifth case was a large carcinoma originating in the first portion of the duodenum.

I have collected twenty-four instances from the records of the Mayo Clinic. During the same period there were 1,689 cases of carcinoma of the stomach, and 1,822 cases of carcinoma of the large intestine. We have had eleven cases of carcinoma of the jejunum, six cases of carcinoma of the ileum, and two cases of multiple carcinoma of the small intestine. One of these patients died from pulmonary embolism following operation, and the other died following operation. At the necropsy there was revealed a papillary cystadenoma of the jejunum, which was removed at operation, a papillary cystadenoma of the duodenum, cirrhosis of the liver, cholangeitis and chronic cholecystitis of the strawberry type with papilloma.

DISCUSSION

DR. ARTHUR DEAN BEVAN, Chicago: We have had no case of primary carcinoma of the duodenum in which we have recognized the condition as such and operated. We have, however, had a number of cases of primary carcinoma of the small intestine, that is, in the upper jejunum. Carcinoma of the small intestine gives much the same picture as a pyloric obstruction, but some points are very different, such as the vomiting of a large amount of material that has accumulated in the stomach and entire jejunal loop, and attacks of partial obstruction resembling greatly the partial obstructions in the large intestine, which have been temporary but fairly acute. The diagnosis can be made with much more certainty by means of the roentgen ray than any other way.

As to therapy, we have given up the idea of making an end-to-end anastomosis in these cases. A lateral anastomosis is three or four times safer for the patient in these cases of carcinoma of the small bowel. Carcinoma of the small intestine, when early diagnosed, gives a favorable prognosis. We have three patients who have been well for a number of years after circular resection for carcinoma of the small intestine.

Are We Justified in Removing a Comparatively Healthy Gallbladder?

DR. W. H. MAGIE, Duluth, Minn.: I am in favor of saving the gallbladder in at least a majority of the cases. I have never seen an empty or collapsed gallbladder. The fact that it is always filled with bile proves that it has much to do with keeping up and regulating the pressure in the bile ducts and liver. This theory is supported by the results of experiments on animals. When the gallbladder is removed in dogs, the remaining cystic duct dilates, as do the common and hepatic ducts. The dilatation of the cystic ducts takes on the appearance of Nature's making an effort to reproduce the gallbladder. This dilatation of the cystic duct has been observed in man after cholecystectomy. This effort of Nature to reproduce the gallbladder is evidence that the gallbladder not only has the function of storing bile, but also has a pressure regulation function on the biliary system. These facts should be taken into consideration when the question of cholecystectomy versus cholecystostomy is to be decided. I have seen the majority of patients with empyemic gallbladders get well and stay well after drainage. If such results can be obtained from empyemic gallbladders, we can expect a mildly diseased one to recover and become again a functionating organ.

Cholecystectomy has a much greater mortality than cholecystostomy. I have had no mortality in my cholecystostomies. Not more than 5 per cent. of patients have required reoperating, and in every case it was on account of overlooked stones or stricture of the cystic duct. Cholecystectomy should be resorted to in: (1) all cases of hydrops with stricture of the cystic duct; (2) many cases of acute gangrene or threatened gangrene of the gallbladder; (3) all cases complicated with embedded stones in the cystic duct with ulceration produced by contact with the embedded stone that when healed would probably cause stricture; (4) all very thick walled gallbladders due to fibrous or calcareous degeneration; (5) all cases of ulceration due to pressure of large stones, and (6) cancer of the gallbladder when the disease is limited to the gallbladder.

Factors That Determine the Relative Degree of Cure in Biliary Surgery

DR. B. B. DAVIS, Omaha: The most frequent causes of lack of complete relief are: (1) impediments, as the result of strictures, torsions and lessened elasticity of the common or hepatic ducts to the free passages of the bile to the duodenum; (2) lack of elasticity and contractility of the gallbladder wall, resulting in stagnation of the bile in that viscus, and

continuous infection, and a tendency for reinfections; (3) adhesions of the gallbladder to the pylorus, transverse colon, omentum and liver; (4) stricture or kink of the cystic duct. A large part of postoperative distress is due to gallbladder adhesions. The only effective way to avoid pericholecystic adhesions is to remove the gallbladder, and this is the most potent argument in favor of indiscriminate cholecystectomies. Surgeons have been compelled to resort to this measure because of the very unsatisfactory results following the more conservative operation. If any effective means could be found for preventing postoperative adhesions, most of the gallbladders now removed could be retained.

Diagnosis, Treatment and End-Results in Fracture of Skull

Dr. W. D. Haines, Cincinnati: Some of the most extensive and fatal brain and cord lesions have followed injury wherein no fracture was found in the ward, roentgen room or dead room. Skull fracture patients are almost without exception suffering from some degree of shock, ranging from slight depression to profound unconsciousness when admitted. Infinitely more good will be accomplished for the patient by employing measures to relieve shock than by immediate operation, the one exception being the presence of active hemorrhage, and even here there is room for argument. Linear fracture of the skull without displacement will require evidence other than that obtained by palpation in their recognition. In suspected cases wherein the roentgen ray is not available, exploration or lumbar puncture, preferably the latter, will aid in establishing the diagnosis. Percussion is of value in such instances, but evidence thus obtained should be confirmed. Shock and altered reflexes enter into the scheme of diagnosis and must be given careful consideration in determining the management of the patient. Pressure symptoms are the most insistent for relief. Their presence, extent and gravity may be very accurately determined by studying the fundus of the eye. Notwithstanding the desperate conditions embodied in fracture of the base of the skull, about 50 per cent. of the patients surviving the first forty-eight hours following receipt of the injury make a final recovery. The treatment should be directed with a view of relieving shock, stopping hemorrhage, preventing infection and controlling pressure.

Ischemic Myositis: Volkmann's Contracture

Dr. E. M. Sanders, Nashville, Tenn.: Three avenues are open to the surgeon for the treatment of this condition: 1. The method of Jones, in which gradual extension is applied to the fingers and wrist by a specially prepared splint, accompanied by vigorous active and passive motion, hot applications, and electricity. Mild cases can be managed satisfactorily by this method. I have used it with surprisingly good results in some cases, and in all the patients were greatly benefited. The value of this method of treatment depends largely on the promptness of its application, the cooperation of the patient, and the persistence with which it is carried out. 2. The more severe cases cannot be so treated with any degree of satisfaction, and should be subjected to tenoplasty, whereby elongation of the tendons of the affected muscles is accomplished. This should not be done earlier than three months from the establishment of the contracture, as it takes about this length of time for the maximum damage to be done. When the anterior capsule of the wrist joint is permanently contracted, the necessity of capsulotomy should not be overlooked. 3. In the more severe cases, and especially in children, resection of both bones of the forearm, as done by Mikulicz, is justified, and has given a fair percentage of good results in apparently hopeless cases. Before either of these operations is advised, one should remember the increased risk of infection because of the deficient nutrition of the parts, and the resulting adhesions between the tendons; and when the bones are dealt with, also the danger of nonunion and deformity. The prognosis should be guarded, as the end-results are apt to be far from ideal. As a rule, surgeons are in too great a hurry to reduce fractures and apply dressings, and this is especially true of fractures of the forearm and about the elbow in children.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Chicago

December, 1918, **1**, No. 12

Organization and Development of School of Ophthalmology. U. S. General Hospital, No. 14, Fort Oglethorpe, Ga., G. E. de Schweinitz.—p. 817.
Ophthalmoscopic Conditions Simulating Sarcoma of Choroid. H. Friedenwald.—p. 822.
Two Orbital Tumors. A. E. Davis.—p. 828.
Tumor of Orbit, with Extension to Frontal and Temporal Regions, Treated by Roentgen Rays. W. M. Sweet.—p. 830.
Transient Left Homonymous Hemianopsia. H. H. Tyson.—p. 831.
Alterations in Visual Fields Associated with Pellagra. F. P. Calhoun.—p. 834.
Practical Point in Technic of Corneal Tattooing. S. Theobald.—p. 847.
Peculiar Anomaly of Fundus Oculi. S. H. McKee.—p. 848.
Congenital Defect of Tarsus with Hypoplasia of Meibomian Glands. K. Hiwatari.—p. 849.

American Journal of Public Health, Boston

December, 1918, **8**, No. 12

Relation of Wages to Public Health. B. S. Warren.—p. 883.
*What is Relation of Wages to Public Health? A. E. Holder.—p. 888.
Sanitation of Explosives Industry. W. G. Hudson.—p. 894.
Civilian Tuberculosis Control Following War Conditions. D. B. Armstrong.—p. 897.
Improved Fermentation Tube Battery. W. F. Wells.—p. 904.
Collection of Birth Reports in Thinly Settled Communities. L. W. Feezer.—p. 906.
Family Statistics from Registration Sources. E. W. Kopf.—p. 910.
Comparative Study of Milk Plates By Four New York Laboratories. Preliminary Report. H. M. Hatfield.—p. 913.
Advertising as a Force in Public Health Education. J. Schevitz.—p. 916.
Rapid Method for Identification of Bacteria Fermenting Carbohydrates. J. Bronfenbrenner, and M. J. Schlesinger.—p. 922.

Relation of Wages to Public Health.—Also published in the *Southern Medical Journal* **11**:787, 1918.

Annals of Surgery, New York

December, 1918, **68**, No. 6

*Extirpation of Choroid Plexus of Lateral Ventricles in Communicating Hydrocephalus. W. E. Dandy.—p. 569.
Rib Cartilage Transplant for Saddle Back Noses. Report of Cases. P. G. Skillern, Jr.—p. 580.
Arteriomesenteric Ileus of Duodenojejunal Flexure. Report of Case. W. H. Fisher.—p. 582.
*Primary Retrograde Intussusception of Sigmoid Associated with Malignant Papilloma. D. C. Balfour.—p. 588.
Myositis Ossificans Progressiva. J. Rosenstirn.—p. 591.
*Dangers of Uterine Curettage. W. A. Lincoln.—p. 638.
Surgical Technic in Orthopedic Surgery. W. G. Elmer.—p. 646.

Extirpation of Choroid Plexus in Hydrocephalus.—Only the treatment of the communicating type of hydrocephalus is considered by Dandy. From the results of experiments on animals a new and scientific form of treatment is suggested, by which it is hoped to circumvent the cause. This treatment aims to restore the balance between fluid production and fluid absorption by reducing the production of cerebrospinal fluid to a level where it can be absorbed. By experiments on animals, the following facts have been established: (1) If the foramen of Monro is occluded, a unilateral hydrocephalus results; (2) but if the entire choroid plexus of this ventricle is removed at the time the foramen of Monro is occluded, this ventricle will be obliterated; (3) therefore, cerebrospinal fluid forms from the choroid plexus, and not from the ependyma. (4) Following total occlusion of the aqueduct of Sylvius the development of hydrocephalus is greatly retarded by the extirpation of the choroid plexus of both lateral ventricles. In this experiment the cerebrospinal fluid, which is produced proximal to the obstruction, can be derived only from the choroid plexus of the third ventricle. The conclusion drawn from these experiments is, that if all the choroid plexuses of the four ventricles could be removed, the formation of cerebrospinal fluid would cease and hydrocephalus could not result, or, if present, its development would cease. To cure obstructive hydrocephalus by removal of the choroid plexus, it would be necessary to remove all of the

choroid plexuses because there is no absorption in the ventricles; but in communicating hydrocephalus, there is about one fifth of the normal absorption. It would not, therefore, be necessary to remove the entire amount of choroid plexus but to reduce its volume until the amount remaining would not produce cerebrospinal fluid faster than it could be absorbed. In other words, it would be necessary to remove about four fifths of the total amount of choroid plexus to reduce the fluid formation to the 8 to 10 per cent. absorption (one fifth of the normal) which occurs in communicating hydrocephalus. It is not feasible to remove the choroid plexus from the third ventricle and very difficult to extirpate flocculi in the fourth ventricle.

The choroid plexuses of the combined third and fourth ventricles equal about one fifth of the total amount in all the ventricles. The plexuses in the two lateral ventricles therefore comprise about four fifths of the total. A bilateral extirpation from the lateral ventricles should, therefore, reduce the formation of cerebrospinal fluid to a point where it can be absorbed by the restricted patent area of the subarachnoid space. Dandy describes the operation which he has done in four cases of hydrocephalus. All these patients survived the operation, although three died two to four weeks after the operation. One patient has survived a bilateral choroid plexectomy ten months, and shows no evidence that the disease is advancing. During and following the operation the reaction seems to vary directly with the grade of the disease.

Retrograde Intussusception of Sigmoid.—The case reported by Balfour is unique for the reasons that the condition was primary and had not developed as a complication to an intussusception of the usual variety, that it was not a terminal event in peritonitis or obstructive vomiting, and that the method of its recurrence could be observed at operation.

Dangers of Uterine Curettage.—Forty-three cases are cited by Lincoln to emphasize that any intra-uterine instrumentation is a dangerous procedure. The indications for such work practically narrow down to the removal of some products of conception or of bits of tissue for microscopic examination, and even here Lincoln says it is probably better to use the finger or placental forceps in the first instance, and it is somewhat doubtful whether the latter procedure is justifiable unless prepared for immediate removal. A curettage is a major operation not to be undertaken except under the very best conditions, and with every possible precaution, by a careful and skilful surgeon.

Archives of Neurology and Psychiatry, Chicago

Jan. 1, 1919, **1**, No. 1

Military History of American Neurological Association. T. H. Weisenburg.—p. 1.
*Treatment of War Neuroses. J. P. Stewart.—p. 14.
*War Neuroses. C. K. Russel.—p. 25.
*Histogenesis of Multiple Sclerosis. T. Klingman.—p. 39. To be continued.
*So-Called "Shell Shock": The Remedy. F. X. Dercum.—p. 65.
*Complete Division of Spinal Cord in Lower Dorsal Region. Case. W. F. Schaller.—p. 77.
Neuropsychiatry in Recruiting and Cantonment. M. S. Gregory.—p. 89.
Genera in Certain Great Groups or Orders of Mental Diseases. E. E. Southard.—p. 95.

Treatment of War Neuroses.—Stewart emphasizes the fact that treatment to be successful must be based on an accurate diagnosis. To arrive at a diagnosis a compete history is of great value. Systematic physical study is required. A hasty or slipshod examination is always bad. The personality of the physician is an all-important factor for successful treatment. The environment in which treatment of neurotic patients is to be carried out should be selected carefully. The patient should be withdrawn from the original surroundings under which his symptoms first developed, and placed under the care of a trained neurologic physician, preferably in a specially arranged hospital. Segregation of early cases, each patient having a special tent or room to himself, away from other patients, is of special value, if the patient is made to feel that he is not being imprisoned, but that he has been selected for special individual care for a limited period of time, and that meanwhile he is under constant observation. An atmosphere of cheerful, mutual confidence and optimism is essential. The confirmed neurotic, or "hospital-bird" who has wandered from one institution to another, gathering pearls of clinical symptomatology by the way, or, in other words, learning new tricks, is much more refractory to treatment than the recent patient who has not yet been examined or treated. The "hospital-bird" tends also to have a considerable superadded element of malingering, which helps him to play his part with added gusto, whether to bored or to sympathetic audiences. The return of the patient to his own home should, as a rule, be postponed until the cure is practically complete.

Symptoms which have been produced mainly by emotional shock or by suggestion are to be treated chiefly by psychical methods; those due to physical concussion or to exhaustion, chiefly by physical remedies, such as rest, massage, diet, electricity, etc. Those due to intoxications are the cases in which drugs are most likely to be of value in combating individual symptoms, such as tachycardia, insomnia, etc. Other cases may require to be transferred for treatment to a mental hospital. Hence, the importance, at the very outset, of the careful diagnosis and accurate classification of each patient. The particular treatment to be followed is outlined in detail. Speaking of hypnosis, Stewart says that hypnotism is rarely necessary. It is open to the objection that the phenomena of the hypnotic trance are themselves essentially hysterical in character, so that by hypnotizing a hysterical patient, one hysterical condition is replaced by another. Clinical experience has shown that waking suggestions are just as efficacious as those achieved by hypnosis, and their effects are more likely to be permanent.

War Neuroses.—During a period of six or seven months, when in charge of the neurologic ward of a general hospital at the base in France, Russel never saw the symptoms of shell shock in a wounded patient. Later in England, in an orthopedic hospital, he saw a few such cases, but they were always in men wounded rather slightly, not sufficient to have made it necessary to send the man back to England, or in patients who had recovered from a wound, and when there was a question of them returning to France again, the symptoms of shell shock developed. Shell shock was not found in German prisoners. Russel made a detailed study of some sixty cases of psychogenetic conditions picked at random and these showed that the average time in France for the whole of this series was two years and eight months, but excluding eight of these men who did spend a considerable time at the front before breaking down, the average time for the rest is reduced to one year and nine months. Nine had never been there at all. Evidently, the only common experience in all these cases was that they were exposed to danger or under the apprehension of being exposed, and the explanation of shell shock not being found in prisoners, either our own or those of our enemies, is that they were no longer exposed to such danger or were not under the apprehension of it. Russel urges that rational scientific methods should be used in the treatment of these psychogenetic cases.

Histogenesis of Multiple Sclerosis.—The basis of Klingman's investigation rests on four cases of multiple sclerosis. All of the patients were under observation for considerable periods of time and presented sufficient clinical evidence for a positive diagnosis. All of the tissue examined revealed, in general, a uniform histopathology, which is described in detail, but not in toto. The description will be completed in the second paper.

Shell Shock.—The application of the term "shock" to the functional nervous disorders observed in soldiers is greatly deprecated by Dercum. He says that the symptoms are due to hysteria and nothing but hysteria. According to Dercum the proper remedy for shell shock is the strict exclusion from the draft of material alike unserviceable, contaminating and demoralizing, and most expensive from the point of view of military economics. The hysterical person is one burdened with a defective organization, which is expressive of a biologic inferiority. That under the severe nervous overstrain of war, fatigue symptoms should present themselves and often

in a pronounced degree, is no more than could have been expected; but this is a very different matter from shell shock.

Spinal Automatism After Spinal Cord Division.—Schaller reports the case of an adult man rendered totally paraplegic following fracture of the tenth dorsal spine and consequent direct injury to the cord. He was first seen one year and three months after injury. Examination disclosed exaggerated inferior tendon reflexes, accompanied by pathologic pyramidal tract signs, marked defense reactions, preserved muscule tonus and patellar clonus, total absence of voluntary motion in lower extremities; involuntary action of sphincters, decubitus ulcers over both hips; absolute anesthesia below the ninth and tenth dorsal radicular skin distribution. Because of the abnormal motor phenomena a compression of the cord was suspected, and a laminectomy performed. A complete division of the cord tissue proper was found. The ends of both cord fragments were trimmed off and preserved for future examination. An effort to suture the two ends of the spinal cord was made and found impossible. Reexamination, in nineteen days after operation, showed the same clinical signs as before operation. The case is cited as a striking example of spinal automatism after cord transection. It is noteworthy particularly because of the long duration of life (almost three years), persistence of the extensor toe reflex; exaggerated patellar and ankle jerks; patellar clonus; automatic bladder and rectum; preserved muscle tonus of normal or increased degree; presence of extensor as well as flexor responses in the same extremity and concomitant flexor and extensor responses of unequal intensity in the muscles of the same extremity.

Archives of Pediatrics, New York

November, 1918, **35**, No. 11

*Postdiphtheritic Paralysis and Spinal Fluid Findings. J. C. Regan. —p. 641.
*Relative Morbidity of Breast and Bottle Fed Infants. H. M. McClanahan.—p. 653.
Conditions in Throat Which Produce Dyspnea: Case of Retropharyngeal Abscess. A. J. Bell.—p. 661.
Purpura Abdominalis in Early Life. W. Weston.—p. 670.
*Prognosis in Tuberculous Meningitis. Report of a Recovery. F. van der Bogert.—p. 676.

Spinal Fluid in Postdiphtheritic Paralysis.—The findings in the spinal fluids in the six cases examined by Regan were normal in all instances with a slight exception in one patient where the albumin and globulin content were slightly increased. In no instances has there been any increase in cells, the cell count never exceeding a total of 7 per cm. Lymphocytes were always the predominant type of cell; indeed, in all but one case the only type present. The reduction of Fehling's solution was normal in all six fluids. Macroscopically, the fluids were clear and transparent. In most instances a slight hypertension seemed to exist as indicated by the increased rapidity of flow through the needle and by a positive Macewen sign. Providing the fluid was removed slowly and in small quantities no detrimental effects were observed. In fact, it was thought that at times slight improvement occurred in the condition of the patient following rachiocentesis. The spinal fluids were taken at various stages in the disease from a period shortly after paralysis developed in some cases, until just preceding or following death in others. It seemed rather doubtful, therefore, that a transient meningeal reaction could exist and yet leave no trace at the diverse periods of the disease in which punctures were performed. It is instructive to note that all the patients in the series were suffering from a grave and usually mortal type of paralysis, a type in which central involvement of the nervous system could most be expected.

Infant Morbidity.—Abstracted in The Journal, July 27, 1918, p. 307.

Prognosis in Tuberculous Meningitis.—Van der Bogert ascribes the recovery in his case to the performance of lumbar puncture.

Arkansas Medical Society Journal, Little Rock

December, 1918, **15**, No. 7

Incidence of Cases of Tetanus in Arkansas. J. C. Geiger.—p. 119.
Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. C. C. English.—p. 121.
Conservation of Vision. H. Moulton.—p. 126.

Boston Medical and Surgical Journal

Jan. 2, 1918, **180**, No. 1

*Chronic Vasoconstriction Spots and Their Significance. E. A. Tracy. —p. 1.
Active Tuberculosis. H. F. Gammons.—p. 8.
Clinical Chart of Renal Diseases. H. S. Jelalian.—p. 9.
Importance of Blood Pressure Observations in Surgical Prognosis. A. H. Miller.—p. 12.

Jan. 9, 1919, **180**, No. 2

Fracture of Neck of Femur. J. W. Sever.—p. 27.
*Experience of Massachusetts State Sanatoria for Tuberculosis During Recent Influenza Epidemic. J. B. Hawes.—p. 35.
*Complement Fixation in Tuberculosis. H. L. Barnes, W. Lake and H. S. Bernton.—p. 38.

Chronic Vasoconstriction Spots and Their Significance.—The chronic vasoconstriction spots observed in the forearms, hands and face, Tracy says, are found associated with nerve and brain lesions. One or more pigment spots are found nearby. Chronic vasoconstriction spots imply an increased flow of nerve stimuli over the vasoconstrictors involved in the production of the spot, a true hypertonia of the vasoconstrictors involved. The cause of the hypertonia of the vasoconstrictors involved in the chronic spots is probably mechanical, an enmeshment of the fibers in glial or hypertrophic connective tissue, and a consequent constant irritation of the neurones by the pressure of this tissue. The cause of the intensification of the spots observed at times, especially in idiopathic epilepsy, is probably a toxin in the blood stream, the product of a faulty metabolism, that further irritates the abnormal sympathetic neurones. Cases in which peripheral nerve and cord lesions are excluded, point to an organic brain lesion.

Effect of Influenza on Tuberculosis.—The testimony obtained by Hawes from the superintendents of state tuberculosis sanatoriums on this point is that an acute attack of influenza, usually associated with bronchopneumonia, of greater or less severity, has had remarkably little effect on the already existing tuberculous process as far as increasing its spread or its activity is concerned. Hawes' experience in his own work confirms these observations.

Complement Fixation in Tuberculosis.—The complement fixation test for tuberculosis was made by Barnes and Bernton on 279 sanatorium patients. Three hundred and ninety tests were made. The serum was examined within twenty-four hours in all but thirty cases; never later than forty-eight hours. Positive reactions occurred in only about 30 per cent. of progressive cases and in only 9 per cent. of negative sputum cases, hence the test is regarded by the authors as being of but slight value in this series of cases.

Colorado Medicine, Denver

December, 1918, **15**, No. 12

Infection-Exhaustion Psychoses. C. W. Thompson.—p. 297.
Pyorrhea Alveolaris. W. F. Drea.—p. 302.
Case of Laryngeal Obstruction Complicating Measles. H. L. Baum. —p. 309.

Journal of Orthopedic Surgery, Boston

January, 1919, **1**, No. 1

Orthopedic Outlook. R. B. Osgood.—p. 1.
*Infected Gun-Shot Injuries of Hip. L. Mayer.—p. 7.
Cleveland and Elyria Cripple Surveys. W. G. Stern.—p. 23.
Tarsal Torsion in Weight Bearing. W. J. Merrill.—p. 33.
Productive Occupational Therapy in Treatment of Disabilities of Extremities. E. G. Brackett.—p. 40.

Infected Gunshot Injuries of Hip.—Five cases are cited by Mayer to illustrate that in dealing with infected gunshot injuries of the large joints, the first consideration is the life of the patient. In deciding on the best course of treatment, the operator should be governed by the principle of removing the pus focus as effectively as possible and with minimal shock to the patient. Simple drainage in the presence of a shattered, infected bone will not suffice. Disarticulation at the hip gives opportunity to clear away the septic focus, but the shock involved is very great. Excision is unquestionably the operation of choice.

The first case cited was one of complete recovery subsequent to extensive purulent coxitis, developing secondarily to an injury to the ramus of the ischium. A satisfactory

range of voluntary motion resulted subsequently to the operation. The significant facts in the second case were (1) the prevention of para-articular abscesses by prompt surgical intervention, (2) the excellent functional result after extensive resection, including 1.5 cm. of the great trochanter, (3) the occurrence of a metastatic purulent arthritis of the ankle joint, as an indication of the pyemia likely to be associated with infected gunshot injuries of the hip. The third case differs from the first two in the mild character of the infection, resulting in a serious rather than a purulent coxitis. Resection was indicated because of the gradual extension of the inflammatory process to the acetabulum. Ankylosis resulted, probably due to the fact that comparatively little of the trochanter was removed, thus allowing it to impinge against the roughened surface of the acetabulum. In the fourth case a large retroperitoneal abscess was present at the time of the first operation, but not detected. This led to a second operation and the loss of a part of the shaft of the femur and a shortening of 10 cm.

The fifth case represents the type of arthritis in which, despite the high temperature, nothing was to be gained by an immediate excision of the joint. The septic symptoms were due to a severely infected communited fracture, not joint involvement. Therefore Mayer waited until the joint was walled off completely by granulations, before removing the necrotic head. The functional result, in this case, was poor, owing to the fact that the shaft of the femur was displaced upward and had no hold against the pelvis. It was impossible to overcome the difficulty by traction or by directing the femur toward the acetabulum; therefore, Mayer constructed an artificial acetabulum. The outer surface of the ilium was exposed just above the acetabular margin; an opening was made through the entire thickness of the bone. A section of the cortex of the tibia about 7 cm. long by 3 cm. wide fitted snugly into this hole. Roentgenogram two months later, showed an effective buttress which prevented upward displacement of the femur and enabled the patient to walk.

Medical Record, New York

Dec. 28, 1918, **94**, No. 26

Clinical Features of Recent Influenza Epidemic. C. E. Nammack. —p. 1103.
Arsenical Treatment of Syphilis. B. S. Dunn.—p. 1105.
Maternal Impressions and Feeble-Mindedness. W. S. Walsh.—p. 1113.
Parotitis as Complication of Influenza. D. I. Macht.—p. 1117.

Jan. 4, 1918, **95**, No. 1

*Importance of Adoption of Electrocardiography and Orthodiagraphy as Routine Measures in Management of Disorders of Heart. L. F. Bishop.—p. 1.
Etiology and Mechanism of "Prison Psychoses." L. E. Duval.—p. 6.
Possible Spread of Influenza Through the Bedbug. G. A. Friedman. —p. 14.
Streptococcus Mucosus Capsulatus Infection in Mastoid. J. M. Smith. —p. 18.
*Sawdust Surgical Handrub. F. Griffith.—p. 19.

Jan. 11, 1919, **95**, No. 2

Typhus Fever. H. T. M. K. Hahmet Bey.—p. 47.
Hydrotherapy in Treatment of Influenza. S. Baruch.—p. 52.
*Two Most Important Signs in Chronic Appendicitis. R. T. Morris. —p. 55.
Hearing and Its Regulation. Especially in Middle Age and Early Senescence. J. M. Taylor.—p. 56.
Brains and Milk. C. L. Redfield.—p. 58.
*Method for Using Dakin's Solution for Continuously Irrigating Mastoid Wound. A. Kahn.—p. 61.
Climatic Illusion in Treatment of Tuberculosis. H. Crutcher.—p. 62.

Electrocardiography and Orthodiagraphy in Management of Disorders of Heart.—Bishop says that every heart has an individuality of its own and every electrocardiograph is just as individual as a man's face or his signature or handwriting. If a patient comes back after a long period he can be identified by his electrocardiograph just as he could by his finger prints. As in the contraction of any other muscle, the heart muscle when it contracts becomes positive at one end and negative at the other end and thus produces an electric current, and while it is not practical to connect a wire to each muscle to demonstrate this, such a test is not necessary. The principle is similar to that of the duplex telegraph, which can carry ten messages over one wire and distribute each to the proper distributing station. In a similar way the different currents run through the heart and there is no difficulty in identifying them because they happen at different times and have certain definite characteristics.

Sawdust Surgical Handrub.—Griffith suggests the use of sawdust as a cleanser for the surgeons hands instead of the usual antiseptics. He claims that it is effective, lessens the skin damage and leaves the operator's hands safe. Sawdust does not clog washbasin wastepipes, for the reason that fine sawdust tends to separate the particles so that they do not lump in running water, and the lightness of the sediment further adapts it to be conveyed unrestricted. The use of sawdust from yellow pine, or fat pine as it is called, sometimes containing much oleoresinous substance of natural antiseptic nature when the turpentine has not been previously extracted from the tree, would prove its worth as a drier of the skin surfaces, especially to replace the chalk and talcum dusting powders where rubber gloves are to be donned. All sawdust for surgeons' use can readily and positively be sterilized by baking. Its adaptation for cleansing away excess oil and scurf and extraneous matter and attached germs from the skin of hands and arms of the surgical operator, aside from being a mere mechanical rub, is not an impractical suggestion.

Two Most Important Signs in Chronic Appendicitis.—The two signs referred to by Morris are: (1) When a chronic irritative appendicitis has registered its nerve impulses on certain sympathetic ganglia for a fairly long time, the muscular coat of the ascending colon becomes wearied. This wearied ascending colon with lax muscular coat remains distended with gas most of the time and gives what Morris calls the "cider barrel sign." Percussion on the left side of the patient's abdomen gives a note reminding one of the cider barrel in October (full) and percussion on the right side of the patient's abdomen gives a note suggestive of the cider barrel in March (empty). (2) The other sign, which, Morris says, is the most important one perhaps, consists in a hypersensitiveness at the site of the fused second and third sympathetic lumbar ganglia. Persistent nerve impulse from an irritated appendix appears to be registered selectively on the fused second and third ganglia causing hyperalgia of more or less permanent character relating to this ganglionic point. By pressing deeply on the abdomen about 1½ inches to the right of the navel and a trifle caudad, the patient feels pain when this particular ganglionic point is pressed on in cases of chronic appendicitis.

Method for Using Dakin's Solution for Continuously Irrigating Mastoid Wound.—Kahn's method is a sort of wound flushing by means of one tube placed in the upper angle of the wound and another tube placed in the lower angle. The irrigating fluid enters above and leaves below. Irrigation thus is continuous, and it can be interrupted at any time.

Military Surgeon, Washington

January, 1919, **44**, No. 1

Sanitation in Camps and Hospital on British Front in France. F. L. Pleadwell.—p. 1. To be continued.
*Acute Cerebrospinal Syphilis: Treatment. G. L. Qualls.—p. 30.
Activities of Public Health Service in Extra-Cantonment Zones. The Venereal Disease Problem. C. P. Knight.—p. 41.
Base Hospital Laboratory. L. H. Spooner.—p. 55.
Scabies at Embarkation Hospital, Camp Stuart, Newport News, Va. C. G. Lane.—p. 65.
Ascending Neuritis After Traumatism. O. F. Scott.—p. 68.

Acute Cerebrospinal Syphilis.—The cases in the series reported by Qualls in which intraspinal neo-arsphenamin medication was employed seem to have improved more rapidly and improvement was apparently more permanent than in those receiving arsphenamin only. He believes that the administration of mercury to its limit of tolerance in conjunction with intravenous and intraspinal medication of arsphenamin is a potent factor for good. By employment of the proper technic the amount of serum given intraspinally may be increased materially without depression or serious after effects, and it is believed with more rapid improvement. In one of the cases the onset and manifestations were of such an acute character that the case could have been easily mistaken for an acute meningitis due to the meningococcus had it not been for the laboratory findings.

Missouri State Medical Association Journal, St. Louis

January, 1919, **16**, No. 1

*Rôle of Vasomotor Response in Cardiac and Renal Decompensation of Hypertensive Cardiovascular-Renal Disease. E. S. Smith, L. H. Fuson and H. H. Shackelford.—p. 1.
*Treatment of Epidemic Pneumonitis at Missouri State University. D. G. Stine.—p. 10.
Special Classes for Children with Defective Sight. An Unfulfilled Local Need. J. Green, Jr.—p. 12.
Crippled Child. Its Physical and Educational Needs. A. E. Horwitz. —p. 16.
Surgical Aspects of Pelvic vs. Abdominal Delivery. E. D. Twyman. —p. 18.

Vasomotor Response in Cardiac and Renal Diseases.—A classification of cardiovascular renal disease is offered by the authors as a working hypothesis. The cases are divided into: A. Those with vasomotor response retained and therefore with mobile arterial tree. B. Those with vasomotor response lost or refractory arterial tree. Group B is further divided into: Vasomotor response refractory temporarily or permanently through presence in blood of irremovable pressor substances. Vasomotor response permanently refractory from sclerosis or calcareous degeneration of arterial wall. Fifty-three cases were studied. The results lead the authors to claim that hypertension is never conservative for either heart or kidneys, but always destructive sooner or later to these organs. Hence an effort should always be made to reduce it; if successful the walls of the arterial tree and the heart and kidney compensation will be observed and their decompensation improved or relieved. If unsuccessful no harm will have been done to either heart or kidneys or arteries. Individuals at about middle life should report to their physician as they do to their dentist, so that hypertension may be detected and controlled before becoming refractory, and thereby preventing all the dire aftermath in heart and kidneys and blood vessels, tending toward a fatal termination. Even after hypertension has become apparently refractory, it may yet prove controllable later when not at first and even if permanently uncontrollable, if heart compensation has yet not been disturbed much can be done to conserve cardiac compensation, and even after its failure it may be for a time at least restored.

Treatment of Epidemic Pneumonitis.—The treatment given by Stine and others in 1,020 cases of pneumonia was as follows: Absolute rest in bed of all cases as even the mildest is a potential pneumonia. The wards were kept warm and patients protected from draughts. There was no attempt to control fever by hydrotherapeutic measures. On entering the patient was given Dover's powder, 2.5 to 5 grains, and quinin, 2.5 to 5 grains, repeated every four hours. Medication by mouth was often discontinued on account of nausea. On the appearance of signs of consolidation, that is, areas of bronchial breathing and dullness, camphor, 36 grains, in sterile olive oil was given intramuscularly every eight hours in men and every ten hours in women. In the severe types of pneumonia this dose was given as often as every four hours for four doses and then every eight hours. Some patients received as much as 800 grains in seven days. In the severer cases that did not respond to the camphor, a transfusion of citrated blood from convalescent patients has been done. The results of this procedure were somewhat doubtful. Normal horse serum seemed to give a beneficial result in about the same percentage of cases. Intravenous infusions of solutions of alkaline salts were without results. The results of the treatment of the infection with a vaccine made from killed diplostreptococci are as yet doubtful. The low mortality of 1.3 per cent., is explained as resulting from the early recognition of the extension of the pneumonitis in the alveolar tissue of the lungs, keeping the temperature of the wards at about 75 F., and to the use of large doses of camphor in those cases where pneumonia was suspected.

Nebraska State Medical Journal, Norfolk

December, 1918, **3**, No. 12

Hemolytic Jaundice with Report of Cases. W. O. Bridges.—p. 361.
Medical vs. Surgical Treatment of Gastric and Duodenal Ulcer. J. M. Mayhew.—p. 369.
Radical Operation for Treatment of Acute or Subacute Peritonsillar Abscess. H. B. Lemere.—p. 372.
Pyelography, Indications and Technic. C. Emerson.—p. 377.
Serial Extraction in Pyorrhea. W. C. Davis.—p. 380.

Neurological Bulletin, New York

October, 1918, **1**, No. 10

Brown-Sequard Syndrome. C. A. McKendree.—p. 373.
Senile and Presenile Psychoses. I. J. Sands.—p. 377.
Nature of Muscular Dystrophies. Report of Changes in Cardiac Muscle in Two Cases. S. P. Goodhart, and J. H. Globus.—p. 386.

New York Medical Journal

Jan. 4, 1919, **109**, No. 1

Surgical Treatment of Intestinal Ptosis. J. R. Goffe.—p. 1.
Good Posture. J. F. Rogers.—p. 9.
Tonsillectomy vs. Helioelectric Methods. T. M. Stewart.—p. 13.
Varying Manifestations at Different Stages of Influenza Epidemic. C. C. Leck.—p. 18.
Fads and Fancies About Pulmonary Tuberculosis. H. Schwatt.—p. 20.
Surgeon and Internist in Treatment of Exophthalmic Goiter. I. Bram. —p. 21.
Cases of Shock. C. G. Cumston.—p. 24.

Jan. 11, 1919, **109**, No. 2

*Medical Treatment of Cancer. L. D. Bulkley.—p. 45.
Development of Consciousness. H. J. Mulford.—p. 50.
Envenomization Suggested as Etiology of Obscure War Diseases. A. Young.—p. 54.
Spanish Influenza Epidemic. J. J. Levbarg.—p. 59.
Foreign Bodies from Trachea and Bronchi. R. McKinney.—p. 60.
Military Training As a Factor in Public Health. C. O. Linder.—p. 60.
Wounds of Knee Joint. C. G. Cumston.—p. 64.

Medical Treatment of Cancer.—Bulkley reviews the etiology and pathogenesis of cancer. He cites references in support of his belief that cancer is the result of a metabolic disturbance, hence in the treatment regulation of the diet is of prime importance. In fact, he says, diet is the most important part in the treatment and prophylaxis of cancer. Drugs are used only to make the metabolism correct and to keep it so. For this purpose Bulkley prefers acetate of potassium, in doses of from 15 to 30 grains, generally combined with nux vomica and fluid extract of rumex root, given three times daily, half an hour before meals, well diluted. Fluid extract of cascara is commonly added, in doses sufficient to secure full and free daily action of the bowels. Iron and phosphatic preparations are also called for in most cases, even over long periods, and very many other remedies may be needed from time to time to render the metabolism correct. Bulkley says that there is no comparison between the results thus obtained and those claimed by surgeons.

Northwest Medicine, Seattle

December, 1918, **17**, No. 12

Traumatic Hysteria and Its Relation to Corporation Employees. W. B. Ewing.—p. 329.
Fractures. J. W. Aird.—p. 332.
Use of Thomas Splint. E. F. Root.—p. 335.
*Intensive Vaccine Treatment of Lung Complications in Present Influenza Epidemic. E. O. Houda.—p. 336.

Vaccine Treatment of Lung Complications of Influenza.—Every case of influenza, with persisting evidences of active disease after the fourth and fifth day, was regarded by Houda as a potential pneumonia because all of them had the findings which preceded the typical evidences in fatal cases, so that Houda is convinced that if untreated they would have developed into the severe types of pneumonia. In all of these beginning pneumonias the usual influenza symptoms were present and all of them had a leukopenia. The intensive vaccine treatment employed consisted of twelve hourly injections of a sensitized pneumostreptococcus vaccine with a total content of 2,000,000,000 of each bacterium, this dosage being given each night and morning until positive evidences of defervescence took place. These evidences usually showed before the fourth dose was given. In no case were more than four doses given. At the end of forty-eight hours there was a marked decrease in the temperature, with a corresponding drop in the pulse rate. After seventy-two hours, the general condition of patients was very similar to the postcritical state of the regular croupous pneumonia. Those who had had consolidation with tubular breathing and dulness still

present these signs. These persisted for as long as two weeks before clearing up entirely, with no temperature and normal pulse after the first forty-eight to seventy-two hour period.

Oklahoma State Medical Journal, Muskogee

December, 1918, **11**, No. 12

Primary and Secondary Manifestations of Pulmonary Tuberculosis. O. A. Flanagan.—p. 377.
Diagnosis of Pulmonary Tuberculosis with Special Reference to Symptoms. L. J. Moorman.—p. 385.
Tuberculosis As a Sequelae of Influenza. C. J. Fishman.—p. 388.
Some Results of First Year's Work. J. Schevitz.—p. 390.

Public Health Journal, Toronto

December, 1918, **9**, No. 12

Study in Diphtheria Mortality, Comments on Treatment. A. L. Hoyne.—p. 560.
What is a Patent Medicine? F. Raney.—p. 569.
Ministry of Health. A. C. Munro.—p. 573.

South Carolina Medical Association Journal, Greenville

December, 1918, **14**, No. 12

Acute Perforations in Abdomen. A. E. Baker.—p. 307.
Appreciation: H. E. McConnell. Wm. R. Wallace.—p. 309.

Southern Medical Journal, Birmingham

December, 1918, **11**, No. 12

*Analysis of 100 Cases of "Rheumatism." W. H. Deaderick.—p. 777.
Pneumonia at Camp Greene. H. Elwyn.—p. 780.
*Report of R. M. Thompson Pellagra Commission of New York Post-Graduate Hospital and Medical School. J. F. Siler, P. E. Garrison and W. J. MacNeal.—p. 786.
*What is Relation of Wages to Public Health? A. E. Holder.—p. 787.
Infection by Bacillus Coli Communis Complicating Pregnancy, Labor and Puerperal State. E. P. Davis.—p. 793.
Future of Railway Medicine and Surgery. W. E. Vest.—p. 796.
Injuries to Eyes of Railway Operatives. Their Prevention and Treatment. G. H. Price.—p. 799.

"Rheumatism" Analyzed.—Deaderick urges a careful examination before pronouncing a diagnosis of "rheumatism." His analysis showed that there were forty-four cases of arthritis in some form and three of muscular rheumatism, or forty-seven cases to which the term "rheumatism," if permissible at all, might be applicable, and that the diagnosis was entirely inappropriate in 53 per cent. of the cases. Thirty of the forty-four patients gave a history of gonorrhea. In the whole group of fifty-three incorrectly diagnosed cases there were eighteen of syphilis, with a positive Wassermann, eight cases of neuritis, four cases of tuberculosis, four cases of flat foot; three cases of pellagra were typical; two cases each of neurasthenia, arteriosclerosis, sciatica and tabes; one case each of chronic nephritis, chronic gastritis, progressive muscular atrophy, malaria, pernicious anemia and myelitis.

Study of Pellagra.—This study, made in two small towns, pellagra foci in South Carolina showed the disease to have been steadily on the increase from 1907 until 1914, this increase being less rapid, however, during the last three years. The incidence of this disease was slightly higher in the white than in the colored race, although this difference is gradually disappearing. Pellagra was relatively common from the age of 1 year up till puberty, when there seemed to be an abatement during that period, after which it increased again. During pregnancy there was an increased resistance to the disease, but this, in turn, was followed by a decrease of resistance during parturition, when occurrence or recurrence is especially liable to take place. Studies on recovery and recurrence showed the former to be more permanent in children than in adults. As regards the latter, it was found that a year without recurrence was an especially favorable omen. From the standpoint of the spread and location of the disease, the authors found that since 1914 practically all the new cases of pellagra in that community developed while the person was residing in the same house with, or next door to, a pellagrin in the active stage of the disease, or within six months after such exposure. It was further noted that following the installation of a proper sewage system the spread of the disease was almost wholly arrested, all of which tends to lend support to the infection theory regarding the spread and outbreak of pellagra.

Relation of Wages to Public Health.—Also published in the *American Journal of Public Health* **8**:888, 1918.

Southwest Journal of Medicine and Surgery, El Reno

December, 1918, **26**, No. 12

Protein Therapy. E. H. Martin.—p. 265.
Official Report of 13th Annual Meeting of Medical Association of Southwest, Held in Dallas, Texas, Oct. 15-17, 1918.—p. 270.

Southwestern Medicine, El Paso

December, 1918, **2**, No. 12

Vagotonia. G. Werley.—p. 1.

Tennessee State Medical Association Journal, Nashville

December, 1918, **11**, No. 8

Cases of Foreign Body in Trachea, Bronchi and Esophagus. R. McKinney.—p. 293.
Influenza. J. J. Waller.—p. 298.
Ovarian Influences. G. R. West.—p. 300.
Backward and Downward Displacements of Uterus. J. F. Gallagher.—p. 305.
Unsettled Points in Etiology of Appendicitis. E. H. and J. P. Baird.—p. 310.

Texas State Journal of Medicine, Fort Worth

December, 1918, **14**, No. 8

Danger and Injustice of Special Legislation for Medical Sects. W. B. Russ.—p. 273.
Bronchoscopic and Esophagoscopic Foreign Bodies. R. C. Lynch.—p. 275.
Case of Foreign Body in Right Bronchus. Value of Thorough Roentgenography. S. N. Key.—p. 278.
Indicanuria. I. L. Van Zandt.—p. 279.
Cholecystectomy vs. Cholecystostomy. L. P. Allison.—p. 281.

FOREIGN

Titles marked with an asterisk (*) are abstracted below.

British Medical Journal, London

Dec. 14, 1918, **2**, No. 3024

*Filtrable Virus as Cause of Early Stage of Present Epidemic of Influenza. H. G. Gibson and J. I. Connor.—p. 645.
Medical Reports on Soldiers Discharged from Army for Conditions Known as "D.A.H." and "V.D.H." T. Lewis.—p. 647.
*Common Factor in Disordered Action of Heart (D.A.H.). L. M. Murray.—p. 650.
Intravenous Injections of Antimony Tartrate in Bilharziosis. J. B. Christopherson.—p. 652.
*Case of Fibroma of Trachea. J. B. Horgan.—p. 653.

Filtrable Virus in Influenza.—The investigations made by the authors and reported briefly in this paper confirm the observations made by Nicolle and Lebailly suggesting the etiologic part played by a filtrable virus in influenza cases. Two rhesus monkeys, inoculated subconjunctivally and intranasally with the filtered sputum from cases of human influenza, became ill on the sixth and seventh day, respectively, that is, after a period corresponding closely with that noted in human cases under similar conditions by Nicolle and Lebailly. Two control monkeys, kept in the same room under similar conditions, manifested no signs of illness during the same period. Of the two inoculated monkeys, one rapidly regained normal health, all symptoms appearing to have subsided by the third day of the attack. The other seemed to be on the mend on the afternoon of the third day, when it was killed for further examination. In the animal the respiratory tract was found to show the presence of a hemorrhagic exudate affecting especially the lower lobes of both lungs. The condition found was in many respects comparable to that noted in certain human cases of influenza in which a fatal issue had supervened before the occurrence of marked secondary infection. In this connection it is interesting to recall the tendency to hemorrhages so often noted during the present influenza epidemic, generally early in the disease. Two rhesus monkeys, at first used as controls and subsequently inoculated, the one with filtered, the other with unfiltered sputum, collected from a case of influenza on the sixth day of the disease, showed no symptoms and remained well.

Common Factor in Disordered Action of Heart.—Murray directs attention to the importance of all debilitating factors in the life history of the individual, which, although disappearing without trace, nevertheless have created a vicious circle which readily recurs, and under any stress will reappear and alter every function of the body, mental and physical.

Fibroma of Trachea.—Horgan's patient was only 9 years of age. When first seen by him, the boy presented all the clinical signs of almost total tracheal occlusion. There was orthopnea and marked stridor, especially during inspiration. The lower sternal and costal cartilages, as well as the upper abdominal parietes and suprasternal notch, were in a state of permanent and very decided retraction. No breath sounds could be heard with the stethoscope in either lung, but a loud vibratory sound was audible over the upper central sternal region. The pharynx and larynx were normal. Examination of the trachea, carried out by means of the Avellis procedure, disclosed what appeared to be a dusky red, globular tumor, situated very low down in the trachea. Horgan performed a low tracheotomy under local anesthesia, but found that the tumor mass lay below the longest tracheotomy tube available. Holding the tracheal rings apart, Horgan inserted a small Luc's nasal forceps in the direction of the bifurcation, grasping and removing a hard pediculated tumor. Breathing at once became easy and consciousness returned. The patient made an uneventful recovery. The specimen proved to be a fibroma, and consisted chiefly of fibrous tissue and blood vessels covered by compound epithelium.

Dublin Journal of Medical Science

December, 1918, **146**, No. 564

Influenza. G. Peacocke.—p. 249.
Id. J. Speares.—p. 253.
Surgical Therapeutics and Operative Technic. E. Doyen.—p. 259.
Statics of Female Pelvic Viscera. R. H. Paramore.—p. 263.
Principles of General Physiology. W. M. Bayliss.—p. 264.
Elements of Science of Nutrition. G. Lusk.—p. 265.

Lancet, London

Dec. 14, 1918, **24**, No. 2

Medical Examination of Aviation Candidates. G. A. Sutherland.—p. 803.
Trench Fever Cachexia. R. D. Rudolf.—p. 809.
*Value of Germinated Beans in Treatment of Scurvy. H. W. Wiltshire.—p. 811.
*Beer and Scurvy. A. H. Smith.—p. 813.

Germinated Beans in Treatment of Scurvy.—In the hospital in which Wiltshire made his observations, two wards, each containing twenty-seven beds, were specially devoted to the purpose of comparing the therapeutic values of germinated beans and fresh lemon juice in scurvy. Scurvy cases were admitted to these two wards alternately without selection. In one ward each patient was given 4 ounces of fresh lemon juice daily, the juice being expressed in the ward, sweetened slightly, and given as a measured dose by the sister. In the other ward each patient received a portion of germinated beans which had weighed 4 ounces in the dry state, half being taken at dinner and half at tea. In respect of other forms of treatment, such as tonics and local treatment to the mouth, no difference was made between the two wards. Thirty patients were treated throughout with lemon juice, and twenty-seven with beans. Contrasting them as regards severity of disease at the commencement of treatment, those treated with beans were, on the whole, slightly worse. Comparing the results of treatment, there is a small but definite difference in favor of those treated with beans, 70.4 per cent., being cured within four weeks, as against 53.4 per cent., of those treated with lemon juice. These figures favor the bean cases unduly, the real difference being better expressed by the time taken for the gums to return to normal, which was 3.1 weeks for bean cases and 3.4 weeks for lemon cases. In another series of twenty-one cases beans were not given until the patients had failed to make satisfactory progress after an average of four weeks' treatment in hospital by other means. These, although they had shown themselves rather refractory to ordinary treatment, all showed acceleration of progress when put on the beans, and in some the difference was very marked.

Beer and Scurvy.—Beer was held for generations to have considerable value as an antiscrobutic, and was long used as such on sea voyages. The virtue of it was not attributed solely to the various ingredients from which it was brewed but largely to the fermentation itself, and beers were made of different materials and in different ways. Spruce beer and sweet wort were especially useful. Malt which is not "highly dried," as in the modern manner, probably retains much of its potency. But, Smith says, with the elaborating and perfecting of malting and brewing processes, the antiscorbutic element seems to have been largely, if not completely, eliminated from malt beer.

Archives de Médecine des Enfants, Paris

December, 1918, **21**, No. 12

*Endocrine Glands and Dystrophy. V. Hutinel.—p. 617. Conc'n.
Large Doses of Diphtheria Antitoxin. G. Bosc.—p. 648.
*Suprarenal Hemorrhage in Children. J. Comby.—p. 651.

The Ductless Glands and Development of Bones.—In this concluding portion of Hutinel's study of "endocrine glands and bone dystrophies" he discusses the therapeutic indications which emerge from this long study of the general pathology of children. He says that organotherapy does not seem to have fulfilled its promises but he thinks that this is because we have been asking too much of it. We cannot expect it to cure incurable infirmities and deformities. If we distinguish the cases in which it will prove actually useful and reliable, and we are content to wait for the benefit to become apparent and not expect it immediately, effectual and durable results can be counted on with it. It must be confessed, he adds, that notwithstanding the abundant literature on the subject, we are still in the tentative stage. It is only by pursuing the investigations, keeping up observations over years, and supplementing them by animal experimentation, that the profession can hope to obtain a decisive judgment on this great question of the organotherapy of dystrophies.

Out of door life, hygiene, dieting, tonics, etc., are indispensable adjuvants to organotherapy and as there are usually more than one endocrine gland involved, it is important to determine which ones. Tentative treatment and occasional failures are inevitable but experience will gradually clear away the uncertainty. It is wise to begin with small doses, as exaggerated susceptibility is not infrequent. Rachitis in infants develops under the influence of defective feeding and digestive disturbance with superposed damage from acute or chronic infections. All of the organs may have suffered more or less in their development, including the endocrinous glands, and their functional upset may add to the clinical picture. An organ extract might help but again it might not. The main reliance is on diet, cod liver oil, phosphorus, etc. But with rachitis in adolescents, supplementary to general hygiene, a trip to the seashore or mountains, rest for body and mind, with ample regulated exercise, thyroid, pituitary, ovary, testicle, even suprarenal extract may have a decidedly favorable influence. We must bear in mind, however, that rachitis at this age is transient and subsides spontaneously; this is another reason for combating it so that it need not leave deforming traces. In osteomalacia the most brilliant results have been realized with suprarenal treatment, sometimes associated with pituitary and thyroid treatment. In two such cases the inherited syphilis had beforehand been given prolonged intramuscular mercurial treatment with the benzoate. In chronic rheumatism, organ therapy gives the best results when the lesions are of recent development. Thyroid, supplemented with epinephrin or suprarenal capsule or pituitary is generally ordered; ovarian treatment for older girls. In adults there is not much encouragement for organ therapy of chronic rheumatism, except possibly with thyroid and ovarian extract for women, given early. Later, they are only possibly useful adjuvants. To be effectual they must be begun at the start and be long kept up.

When a child keeps small, backward in developing, infantile, and there is reason to assume deficient thyroid functioning, thyroid treatment is absolutely indicated. It should be with large doses, long kept up. It may sometimes be useful to add ovary, testicle, pituitary or suprarenal treatment in addition to the cod liver oil, iron, arsenic or other measures that may be needed. With giant growth and acromegaly there are usually several glands involved, and pituitary treatment is generally futile as the lesions are irreparable. In the obese, and with deformed bones, thyroid treatment is the chief indication at first, and later, pituitary. Ovarian or testicle treatment should be added if the genital organs are backward in developing, plus calcium and iron, and hygienic

environment. It is wise to weigh frequently and not to try to reduce the weight too fast. In children that are thin and look as if they had consumption, with trophic disturbances in bones and skin, suprarenal capsule, associated sometimes with pituitary and always with general hygiene, has given encouraging results, undoubtedly because there is a certain degree of suprarenal insufficiency.

Suprarenal Hemorrhage in Children.—Comby analyzes some recent works on hemorrhage in the suprarenals in children. When it is actual apoplexy, it is inevitably fatal, but with anything short of this, with low blood pressure, intermittent cyanosis and asthenia, large and repeated doses of epinephrin are called for, watching over the effect by the arterial pressure. He cites Vollbrach's case in which a girl of 15 presented purpura a year before developing Addison's disease.

Bulletin de l'Académie de Médecine, Paris

Dec. 3, 1918, **80**, No. 48

Arsenic-Quinin Treatment of Influenza. A. Gautier.—p. 474; A. Robin.—p. 479.
*Nature of the Influenza Germ. B. Roussy.—p. 482.
*Uneven Pupils after War Wounds. A. Tournay.—p. 486.
Extraction of Projectile in Lung under Screen Control and through Minimal Incision. P. Mauclaire.—p. 488.

Influenza.—Roussy says that between 1889 and 1894 he himself had over a hundred attacks of grip, and his observations on himself as well as on others have convinced him that the virus is a volatile poison in the air around an influenza patient. When breathed by a susceptible person its toxic action is felt at once; it seems to be a species of pathogenic microbe invisible with the most powerful microscopes, and far more virulent than any other known microbes—a kind of living vapor.

Uneven Pupils.—Tournay refers to some cases of miosis resulting from war wounds entailing some deficiency in the cervical sympathetic functioning.

Presse Médicale, Paris

Dec. 5, 1918, **26**, No. 67

*Injections of Saccharose. D. Lo Monaco.—p. 617.
*Pituitary Polyuria. A. Bergé and E. Schulmann.—p. 618.
Oscillography of the Heart and Vessels. A. Strohl.—p. 620.
*Treatment of Tuberculous Glands. L. Dufourmentel.—p. 621.

Injections of Sugar in Treatment of Tuberculosis.—Lo Monaco is director of the Institute of Physiologic Chemistry of the University of Rome, and the results of his research on subcutaneous injections of sugar have been widely heralded as the sugar treatment of tuberculosis. He here brings the subject down to date, emphasizing that small doses of sugar promote secretion while large doses check it. He relates that subcutaneous injections of small amounts of sugar increase the secretion of milk in women and in cows, without modifying the quality of the milk. On the other hand, injection of a comparatively large amount reduces or arrests secretion, as also occurs when a compress dipped in a thick solution of sugar (equal parts) is applied to arrest superficial or deep hemorrhages. This solution is kept constantly on hand for this purpose by several surgeons at the large hospital in Rome. It has proved its usefulness after transvesical prostatectomy, splenectomy, operations on the brain, and in uterine hemorrhage. It is constantly used for operations on animals, and has been found effectual in reducing suppuration and hastening the healing of wounds. This action on wounds suggested the use of sugar to reduce expectoration in pulmonary tuberculosis, and Lucherini and Galea, his pupils, applied in several cases these daily injections of sugar solution. Their reports were enthusiastic, saying that the secretions, expectoration, and night sweats subsided. Many private patients after forty-five or fifty injections have suspended the treatment with no return of expectoration to date. Even the moist râles have subsided and several of the patients have returned to work, no longer a danger for others. The treatment is indirect, but there is reason to assume that the process in the lung is tending toward healing.

The only drawbacks of the method are that the injections are painful, and a little cocain has to be added. They are also liable to induce fever of a septic type in some; in others they arrest fever. The sugar treatment displays no efficacy in florid phthisis with grave intoxications. Its field, he reiterates, is in cases in which the acute phase is past and the main symptoms are profuse expectoration and night sweats, with little or no fever, but great debility and emaciation. In such cases the sugar injections may induce actual resurrections. Improvement is manifest by the tenth day. This treatment is very useful also in cases of dilatation of the bronchi, in asthma and in emphysema. The injections are entirely harmless, the toxic dose of sugars being from 10 to 15 gm. per kg. of body weight. There are no contraindications, but the treatment should always be under the supervision of a physician, and he should emphasize that the sugar does not act on the tubercle bacillus directly. When there is no further expectoration, the tubercle bacillus dies out from lack of a suitable medium for its propagation. The sugar injections modify also gastric, pancreatic, biliary, renal and other secretions as well as bronchial secretion. His pupil, Barba, has treated large numbers of the tuberculous by this means and kept them long under supervision. Lo Monaco does not mention the daily dose of sugar injected, but it has been stated elsewhere as 5 gm. of saccharose in 5 c.c. of sterilized distilled water (THE JOURNAL, Sept. 28, 1918, p. 1083).

Pituitary Polyuria.—In a case described there was variable polyuria, more pronounced at night. At times the output of urine measured more fluid than the woman had drunk during the twenty-four hours, but the food eaten did not seem to modify the total output, and the composition of the urine and the functioning of the kidneys seemed normal. The most interesting feature of the case was the constant subsidence of the polyuria when the patient was given the extract of the posterior lobe of the pituitary gland. The effect of this treatment is the touchstone which reveals the pituitary origin of the polyuria. In this case necropsy revealed eight gummatous lesions in the pituitary, mostly in the posterior lobe. The woman succumbed to progressive debility and dehydratation.

Operative Treatment of Tuberculous Glands in the Neck.—Dufourmentel reports that rapid and complete healing was always realized in his cases after excision of tuberculous glands in the neck, and he ascribes this invariable success to his routine procedure of suturing immediately without draining. In more than half of his sixty-three cases the gland burst and pus inundated the field, but his assumption that the pus in such cases is sterile was always confirmed by the healing by primary intention. The clips were removed the sixth day; the fifteenth the patient was sent away to convalesce. The scar later naturally was scarcely perceptible unless there had been a preceding fistula. Operative treatment should be preferred for men, and when there are already scars, or the glands are extremely large. He warns that the teeth and tonsils must be put in order or the glands may be infected anew.

Progrès Médical, Paris

Nov. 2, 1918, **33**, No. 44

*Quinin and Arsenic in Prevention of Influenza. C. Garin.—p. 369.
Grave Lesions from Contusion by Projectile. Chaton.—p. 369.
Partial Inversion of Viscera. L. Moreau.—p. 371.

Nov. 9, 1918, **33**, No. 45

*Foreign Body in Knee. J. Fiévez.—p. 377.
*Fracture of Scaphoid Bone. P. Japiot.—p. 378.
Exploration of Renal Functions in Nephritis. P. V. Radot.—p. 379.
Hygiene in France. Granjux.—p. 380.

Quinin in Prevention of Influenza.—Garin noticed that none of the men being given treatment for malaria developed influenza at Lyons. He sent a questionnaire to the ninety hospitals or hospital sections devoted to the care of malarial soldiers, inquiring as to their experience with influenza this year. Replies were received from forty-six institutions and 61 per cent. reported no cases of influenza among the malarial inmates, and 20 per cent. influenza in a very mild form among them. In 19 per cent. no difference as to the incidence of influenza was noted among the malarial and the nonmalarial. The protection seems to be greater when the malarial are taking both arsenic and quinin. At the Lyons hospital, thirty of the malarial inmates aided in caring for the 300 influenza patients but none of them contracted the disease.

Foreign Body in the Knee.—The knee was bent in irreducible contracture and this and recurring hydrarthrosis were explained by a minute shadow of a scrap of shell at the median posterior superior part of the joint, at the upper part of the anterior aspect of the crossed ligaments.

Fracture of the Scaphoid Bone Without Displacement.—Nothing but the roentgen rays would have allowed the discovery of this fissure in the bone, and only by profile radiograms of the painful and the sound foot. It is indispensable also to apply roentgenography early, before time has modified the aspect of the fissure.

Correspondenz-Blatt für Schweizer Aerzte, Basel

April 20, 1918, **48**, No. 16

Notes of an Otologist in Austro-Hungarian Military Hospitals. W. E. von Rodt.—p. 497.
The Cremaster Reflex Zone. E. Loewy.—p. 507; A. Rodella.—p. 507.
War Gas Phlegmons. P. F. Nigst.—p. 508. Conc'n.

April 27, 1918, **48**, No. 17

*Compulsory Insurance against Sickness and Accidents. F. de Quervain.—p. 529.
*Plastic Motor Surgery. H. Hoessly.—p. 538.
*Prophylaxis of Endemic Goiter. R. Klinger.—p. 546.

Insurance Against Sickness and Industrial Accidents.—De Quervain reviews his experience with the workings of the new legislation on insurance against sickness and industrial accidents in Switzerland. He comments on the leveling effect of practice among the insured. Some who do not require it get an undue proportion of the physician's time and tendance, while others who need it more get only the same average attention. This is the great drawback of contract practice. Next in importance to this is the danger of the physician's clerical work overshadowing his strictly professional work. The physician must impress on himself that the description of a symptom on his certificate is not a diagnosis. Headache, for example, may warn of nephritis or brain tumor. Trigeminal neuralgia, on the other hand, is usually accepted as merely functional until after the failure of treatment. The same may occur with pain elsewhere and precious time be wasted in case of malignant disease. The insured with acute appendicitis, etc., is not so well off as the man picked up on the street, as the police take the latter to the hospital at once, while the insured, with a perforated gastric ulcer or acute pancreatitis, is kept at home for the insurance medical officer to see what is the matter, and by the time he reaches the surgeon, the latter has no chance for anything except to sign the death certificate. Careful clinical study of the case is a fine thing except when the life depends on an hour more or less. It is better to save a sick man undiagnosed than to let him die correctly diagnosed. De Quervain warns the physicians of his town against this tendency, the dire effects of which are being seen more and more by the surgeons in the hospitals. The opposite tendency is equally disastrous in chronic disease; cancer of the rectum, for instance, being overlooked for weeks, as the bleeding is ascribed to hemorrhoids alone. Many a retrosternal goiter goes unsuspected and the case recorded as emphysema or bronchitis. Intercostal neuralgia may mask spondylitis or cancer of the ribs. If only the term catarrhal affection of the bladder could be stricken from the list, tuberculosis of the kidney might be detected oftener and earlier. He warns in particular against the term sciatica. This may cover almost anything, from diabetes to cancer. All the possibilities must be systematically borne in mind in every case. The correct diagnosis requires examination, and thorough examination takes time, and the time at the insurance physician's disposal has to be mainly taken up with making out the clerical record of the case. This is the evil side of the present law.

The evil side of industrial accident insurance is that the injured workman feels that he has certain rights from being insured which set him apart from other injured persons. He looks on the physician as not his friend, not even a neutral, but the man whose dictum as to the compensation he is to receive will never be as favorable to him as he wants it to be. His first letter, his first call on getting out, are to the lawyer to defend him against the physician, against the insurance company, against society at large, all banded together to prevent his getting his just rights. This state of mind is much more universal than physicians imagine. We must keep it constantly in mind through the entire management of the case. We must apply psychiatric prophylaxis and therapy to help the man overcome the inhibitions engendered by this psychology, and do this—and this is the main point—without letting him notice it. For instance, the first use of a limb after a fracture is always more or less painful and disagreeable, but the noninsured man goes at it as a necessary part of his getting well. The insured man, on the other hand, resists the exercise, postponing it until it can be done without disagreeable sensations. He cannot understand that he, the workman to be compensated, must conform to Nature's laws, as for him there are no duties, only his rights. The more consciously he comprehends this, the greater the inclination to exaggeration and then to simulation. The care of the single patient and the whole practice in workmen's compensation cases must be inspired by prophylaxis against these tendencies of the insured, without letting them suspect our aim. First and foremost is the necessity for treatment of the insured and noninsured together and on an equal footing. Anything that suggests that the insured is a special personage must be combated. The greed of the insured is contagious, and when they are segregated it develops more and more, and tricks are invented and taught to others. Special hospitals for certain industries, etc., may be necessary, but when they can be avoided it is much better to keep the injured workmen, without any discrimination, among the general accident cases.

De Quervain reviews the various industrial accident cases liable to be encountered and the special pitfalls for the unwary diagnostician. He has frequently encountered cases of fracture of the atlas or total luxation of the fifth thoracic vertebra without the slightest apparent injury of the spinal cord, and hence the fracture had escaped detection. Symptoms from the roots may point to the injury unless they are mistaken for rheumatism. A fracture need not be mistaken for a simple sprain or contusion if we recall that pain on axial pressure subsides in a few days, while the sharply circumscribed local pain on pressure of a fracture persists for three or four weeks.

He warns that all injury of nerves must be sought and registered with special care so that an attempt may not be made later to ascribe the nervous trouble to the treatment applied. The axillary nerve with dislocation of the shoulder and the radialis with fracture of the shaft are the ones usually involved. A puncture or stab wound of the tendon sheaths usually heals in two or three days, and the physician seldom has the courage to cut down to the tendon, but fatal sepsis may be the result of abstention or even of too timid an incision. Several short but deep incisions may save the finger functioning and perhaps the life. Many other useful warnings and suggestions for management of industrial accident cases are given and specific instances described in illustration.

Plastic Motor Operations.—Hoessly describes among others his success in enabling the artificial fingers to be moved from the natural sources of energy in the short stump of the left forearm in a case illustrated. The patient was a girl of 16 and the stump was a congenital deformity. The sensibility of the stump was remarkably acute, approximating that of normal fingers. Nine illustrations show the prosthesis devised for this case and the nearthrosis of the elbow which facilitated functioning to such an extent as to suggest the advisability of artificially inducing a nearthrosis of the kind at amputations. The force here is derived mainly from the elbow joint and not from the muscle alone. The girl runs the sewing machine, threads her needles, takes measures, etc., and is self-supporting as a seamstress. In another case of congenital defect of the left hand, ample force for voluntary control of artificial fingers is obtained from the wrist.

Prophylaxis of Endemic Goiter.—Klinger advocates that at least 2 or 4 mg. of iodin should be given to each person daily in experiments in the prophylaxis of goiter. Any amount less than this is futile. Even this totals only from 1 to 1.5 gm. per year.

Gazzetta degli Ospedali e delle Cliniche, Milan

Aug. 22, 1918, **39**, No. 67

*Epithelioma Developing on Lupus. C. Vignolo-Lutati.—p. 655.

Aug. 25, 1918, **39**, No. 68

*Serotherapy in Erysipelas and Typhoid. A. Campani and F. Bergolli. —p. 662.

Cancer Developing on Lupus.—Lutati has encountered two cases of cancer developing on lupus, among 107 patients with lupus vulgaris. One was a man of 35 who had had lupus for twenty years. The other was a woman of 26 with lupus of fourteen years' standing. Both died within a month or six weeks after applying for treatment, the carcinoma or epithelioma running a rapidly fatal course, involving cheek, nose and lip. The woman refused an operation and the growth was already inoperable in the man when first seen. In a third case the carcinoma developed in the scar tissue left from erythematous lupus. He thinks that probably scar tissue is always involved in the development of cancer on lupus as this occurs only in old cases in which there is probably more or less cicatricial tissue. One of the advantages of the Finsen treatment is that the healing under it leaves such good scars. In conclusion he cites the figures from five clinics, each with from thirty-one to eighty-six cases of carcinoma on lupus tissue, and from eleven to thirty-six developing on healed lupus lesions.

Intravenous Serotherapy in Erysipelas and Typhoid.—Campani and Bergolli have been using diphtheria antitoxin by the vein in treatment of erysipelas, and report excellent results from it. They tried antistreptococcus serum at first but found the diphtheria antitoxin more potent. They gave this treatment only in the graver cases, with fever, delirium and prostration, but without abscesses. Three of forty-eight soldiers treated with the usual measures died, but none died given this intravenous treatment. The dose was 10 c.c. representing 5,000 units. The results justify, they think, that this treatment should be systematically given the preference in the graver and rebellious cases. In typhoid the experience was about the same, only that of all the vaccines and serums tried antimeningococcus serum seemed most effectual. They give the details of seven typical cases to show the efficacy of this nonspecific serotherapy. Antistreptococcus serum has not proved effectual in erysipelas nor antityphoid serum in typhus, according to the general consensus of opinion, but this nonspecific serotherapy reduced the mortality appreciably in his cases although it was applied only in the gravest forms of the disease. The prompt return of consciousness and the euphoria were the most striking effects at first, although the drop in the temperature was impressive. No phenomena suggesting anaphylaxis were observed in any instance. From three to five injections were made by the vein, on successive days, using 10, 20 or 30 c.c. at last.

Policlinico, Rome

Nov. 24, 1918, **25**, No. 47

Pathogenesis of Influenza. O. Paleani.—p. 1133.
*Absent Knee-Jerk in the Healthy. G. Garbini.—p. 1136.
Tropical Dermatoses in Libyan Region. F. Leporini.—p. 1146.

Dec. 1, 1918, **25**, No. 48

*Amebic Dysentery. T. Pontano.—p. 1161.
Aerophagia of Nasopharyngeal Origin. G. Bilancioni.—p. 1171.
*Rupture of Spleen. B. Masci.—p. 1174.

Absent Knee-Jerk in the Healthy.—Garbini remarks that in the two apparently healthy and robust young men, brothers, in whom it was impossible to elicit the knee-jerk, as also in eight similar cases on record, one of the parents had a history of syphilis although no trace of it was evident in the children.

Amebic Dysentery.—Pontano emphasizes that the demobilization of the troops will probably bring cases of amebic dysentery into current medical practice, and he here reviews our present knowledge on diagnosis and treatment. Emetin, he asserts, given in time will ward off complications as well as recurrences. When the amebic is associated with bacillary dysentery, serotherapy should be pushed in addition, from 20 to 40 c.c. a day.

Rupture of Spleen.—A fall from a window caused such concussion of the brain and shock that several hours elapsed before the robust girl recovered consciousness, and no symptoms on the part of the abdomen could be detected before this. Then it was discovered that the spleen had been ruptured and torn completely off its pedicle although there were no signs of contusion of chest or abdomen. The vessels in the pedicle had spontaneously ceased bleeding. The spleen was found absolutely sound otherwise.

Riforma Medica, Naples

Nov. 16, 1918, **34**, No. 46

*Indoxyl in the Feces. O. Cantelli.—p. 910.
Deep Incisions for Severe Epididymitis. G. Garibaldi.—p. 912.
*Roentgen Localization of Foreign Bodies. A. L. Soresi.—p. 913.
Referendum on Influenza. Bonome and others.—p. 915; S. Chirico. —p. 923.
Present Status of Operative Treatment of Tuberculosis of Male Genital Organs. E. Aievoli.—p. 919.

Indoxyl in the Urine.—The results of Cantelli's research suggest that indoxyl is not a normal constituent of the urine, and is not present in certain forms of sickness. But it was found in some cases of appendicitis and of occlusion of the colon. This apparently indicates that the indoxyl in the feces is of autochthonous origin, dependent on special conditions in the bowel resulting from partial or complete closure of the lumen.

Roentgen Localization of Foreign Bodies.—Soresi fastens the limb to be examined in a frame to hold it immovable, as shown in illustrations. Very useful is a little device with blades and handles like forceps. One blade terminates in a lead ring, the other blade in a small pad which is dipped in ink. When the hand releases the upper handle the pad drops in the center of the lead ring. This marks the spot on the skin as the foreign body is seen with the rays and centered in the lead ring. By examining from different points and marking the spot casting a shadow, the foreign body is located with precision without any calculations, etc.

Gaceta Medica de Caracas

Oct. 31, 1918, **25**, No. 20

*Relapsing Fever in Venezuela. C. J. Bello.—p. 209; p. 213.
Insect Transmitters of Relapsing Fever. Bello and Sucre.—p. 215.
Case of Thrombosis of Mesenteric Vessels. L. Razetti.—p. 216.
*Gastro-Enterostomy for Stenosis of Pylorus. Razetti.—p. 217.

Relapsing Fever in Venezuela.—Bello gives the details of six cases of autochthonous relapsing fever at San Cristobal. The spirochete was cultivated from the blood of all, including one boy of 5 who had four paroxysms of fever. Treatment was merely symptomatic in this and some of the other cases, but two adult patients were given 0.3 or 0.45 gm. of neo-arsphenamin by the vein. Bugs of the cimex and flea families or ticks were found in the patients' homes, but the evidence seems to incriminate more the ticks in the transmission of the disease.

Stenosis of the Pylorus.—Razetti reports a case of stenosis of the pylorus which he says is the third operative case on record at Caracas, and the first one in which the posterior transmesocolic gastrojejunostomy completely cured the patient.

Medicina Ibera, Madrid

Aug. 17, 1918, **4**, No. 41

*Thrombosis in Mesenteric Vessels. E. Avellan.—p. 157.
Diagnosis of Concrete Sebaceous Acne. Sicilia.—p. 160.

Aug. 24, 1918, **4**, No. 42

*Intravenous Treatment of General Paresis. E. F. Sanz.—p. 187.
Sulphur in Psoriasis. J. F. de la Portilla.—p. 189.

Thrombosis in Mesenteric Vessels.—Avellan ascribes to thrombosis and embolism in the mesenteric vessels a certain proportion of fatalities after abdominal operations in which forceps with elastic blades were used. They injure the intima of the vessels, rendering the inner surface uneven, while the blood accumulates in the vessel below the compression—all factors which favor thrombosis. They can all be avoided by using long suture threads, passed through the stomach and loop of intestine, the ends of each left long, to lift the organs by, doing away with the necessity for forceps. In a case described, a volvulus seemed by exclusion to be the explanation for the ileus, but the laparotomy revealed embolism in the superior mesenteric artery. The man of 72 had

atheromatous changes in the aorta, and embolism from this caused disturbances requiring resection of over 4 feet of the small intestine. The first symptom in the case had been sudden acute pain in the region in the vicinity of the umbilicus, soon after eating, accompanied by vomiting and rigidity of the abdominal wall in the region of the umbilicus. In a recent compilation of 200 cases, the mortality was 94 per cent. In 41 per cent. of the cases blood in the stools was an early sign of the mesenteric thrombosis or embolism.

Treatment of General Paresis.—Sanz calls attention to the great benefit derived in two cases of general paresis from intravenous injections of neo-arsphenamin or mercuric cyanid. One patient was a woman of 50, the other a man of 58. The latter was given thirty injections of the mercury preparation and eight of the neo-arsphenamin, in graduated doses, with potassium iodid internally. In the course of two months the improvement was striking, and the man was able to return to his responsible business position.

Prensa Medica Argentina, Buenos Aires

Oct. 30, 1918, **5**, No. 15

*Beef Serum in Prophylaxis of Serum Sickness. J. Penna, J. B. Cuenca and A. Kraus.—p. 149.
Malformations of Uterus. M. L. Pérez.—p. 150.
*Protection for Motherless Nurslings. M. Acuña.—p. 154.

Prophylaxis of Serum Sickness.—See abstract 96 in The Journal, Jan. 18, 1919, p. 232.

Care of Infants Separated from Their Mothers.—Uruguay has a law which places the nurslings of women who go out to take positions as wetnurses, and all children under 2 who are separated from their mothers, under the care of the state and community. Acuña urges the adoption of a similar law in Argentina, and outlines a model bill for the purpose. There is supposed to be already a register for wetnurses with official supervision of the infants left behind at home, but this Oficina de Nodrizas is of little practical use, the wetnurses not taking the trouble to register and the public not realizing the advantages of a registered wetnurse with her health certificate. Registration should be made compulsory, and the person caring for the infant separated from its mother should be compelled to bring it for inspection every two weeks, and in case of sickness take it to the nearest dispensary and notify the Oficina de Nodrizas. The Roussel law in France specifies six months as the lowest age at which the mother can leave her child to take a position as wetnurse, but Acuña accepts five months as the limit. Persons caring for infants separated from their mothers should also register, and have their health and home inspected.

Revista Medica Cubana, Havana

November, 1918, **29**, No. 11

*Causal Germ of Prevailing Epidemic. L. Plasencia, J. M. M. Cañas and F. Hurtado.—p. 569.
Impressions of Recent Trip to America. J. Santos Fernandez.—p. 592.

See third abstract below.

Semana Medica, Buenos Aires

Aug. 1, 1918, **25**, No. 31

*Neuralgia of the Testicles. J. Nin Posadas.—p. 137.
Inflammatory Tumor of Cecum. A. Ceballos.—p. 146.
Utero-Abdominal Abortion. C. A. Castaño.—p. 149.
Unification of Public Health Forces. E. R. Coni.—p. 153.

Aug. 15, 1918, **25**, No. 33

*Plastic Motor Surgery. G. B. Arana.—p. 201.
Pomegranate Flowers in Treatment of Dysentery. J. E. Carulla and R. A. Borzone.—p. 215.

Neuralgia of the Testicle.—Nin Posadas noticed that after an operation for varicocele by any method except that of extensive resection of the vaginalis, there was liable to be pain, generally accepted as neuralgia of the testicle or irritable testicle. His study of these cases, however, as in other cases with pains in the testicle convinced him that there was some organic basis for the pain although nothing pathologic could be seen. By pinching the vaginalis and palpating the testicle he found evidence of adhesions, and with a simple operation under local anesthesia he succeeded in breaking up these adhesions and curing at one stroke the "neuralgia" or "irritability" which had long tormented the patients. Eight typical cases are described in detail. There is usually a history of acute or chronic venereal disease or of trauma, and the vaginalis process may be of the adhesive type or fibrous or both. He could find no record in the literature of this unsuspected adhesive vaginalitis as the cause of the disturbances until, in 1912, Bellenger and Elder reported a case of intense neuralgia of the testicle cured by removal of the testicle. After its removal the discovery of minute adhesions explained the pains.

Plastic Motor Surgery.—Arana describes with twenty illustrations his method of making a single loop in the stump of a leg after amputation to utilize the motor forces still left for voluntary control of the prosthesis. He also describes with illustrations the procedures devised by others, and the principles involved. With his method the plastic motor in one case described has a potential force of 3 kilograms with 2 cm. of excursion. The tunnels were solidly lined with epidermis by the tenth day after the operation. He makes four incisions from 8 to 15 cm. long on different sides of the stump and resects the end of the bone in the stump. The skin between the four incisions is loosened to make four bridges, all well supplied with nerves and blood. Muscles that are not to be utilized and that are in the way are resected also. Then the loosened up skin forming the anterior and the posterior bridges is drawn down into two incisions which meet in the depths to form a tunnel. The skin is sutured together there and thus a skin lining for the whole tunnel is provided, first on one side of the tunnel and then on the other. A roll of gauze is then worked into the tunnel which is soon ready for use and is able to vitalize the artificial limb to a surprising extent by the loop formed by the sutured muscles.

Vida Nueva, Havana

November, 1918, **10**, No. 11

*The Specific Germ of Influenza. L. Plasencia.—p. 293; —p. 311.
Motais' Operation for Ptosis of Upper Lid; Two Cases. A. F. Oñate.—p. 297.
Medical Treatment of Gastric Ulcer. R. G. San Martin.—p. 298.
The Epidemic of Influenza. O. Montoro.—p. 304.

Bacteriology of Influenza.—The main points of Plasencia's communication on the coccobacillus he isolated from influenza patients were given in The Journal, Dec. 7, 1918, p. 1928.

Kitasato Archives of Experimental Medicine, Tokyo

July, 1918, **2**, No. 2

*Tsutsugamushi Disease. T. Kitashima and M. Miyajima.—p. 91. To be continued.
*Acceleration of Phagocytosis in Citrated Blood and Citrated Blood Plasma. M. Otani.—p. 147.
*Pulverized Bile as Aid in Determination of Typhoid Bacilli in Water and in Blood. H. Toyoda.—p. 219.

Japanese River Fever.—This first instalment of this report on extensive research on tsutsugamushi disease is accompanied by three colored plates and several other illustrations. The article is in German, and describes experiments on laboratory animals and monkeys with successful inoculation by means of infected mites. The Japanese word *mushi* means "mite," and the present research has confirmed beyond question that the disease is contracted from the bite of a mite or acarus. From one to four of these mites were found on fifteen of twenty-six persons working on the river bank in the infested regions. Some of them had had the disease in previous years, but others had showed no signs of it at any time, so that not all the mites are infected.

Acceleration of Phagocytosis in Citrated Blood as Test for Tuberculosis.—Otani writes in English to call attention to the acceleration of phagocytosis by citrated blood when the blood comes from a tuberculous subject. Comparison with the opsonic index shows much more active phagocytosis with tuberculous than with normal blood. In 82 clinically normal cases the phagocytosis was weak in 56 and active in only 13, while in 100 tuberculous cases only slight phagocytosis was observed in 3 while 89 showed very active phagocytosis. His tabulated findings seem to demonstrate that in this activation of phagocytosis we have a specific reaction which promises to have important diagnostic value. He made an emulsion of

virulent tubercle bacilli with 1.5 per cent. sodium citrate (containing 0.85 per cent. sodium chlorid), one volume of which was mixed with an equal volume of fresh blood. The phagocytosis was then observed. It was much more active in tuberculous than in normal blood. In cases in which apparently normal blood showed lively phagocytosis, the tuberculin test revealed that tuberculosis was already installed. The opsonic index fails to show any distinction between normal and tuberculous blood in respect to the phagocytosis. However, the virulence of the bacilli is a modifying factor, as with only slightly virulent bacilli the phagocytosis may be the same in all specimens of blood.

Desiccated Ox Gall in Bacteriologic Work.—As typhoid bacilli thrive on bile better than many saprophytic bacteria, Toyoda inoculates the culture medium as usual and then adds desiccated and pulverized bile to it. By this enrichment procedure even as few as ten typhoid bacilli per 100 c.c. of water can be always experimentally cultivated from it. Applying this technic to 150 different sources of the water supply revealed typhoid bacilli in four while with other technics only one was found contaminated. In testing typhoid blood, an 8 or 10 per cent. bile medium gave the best results in experimental research and an 8 per cent. in the clinic. The desiccated gall can be kept constantly on hand and is ready to use as needed. For the blood test he prepares a culture medium with 3 gm. pulverized gall; 1 gm. peptone; 0.5 gm. sodium chlorid and 100 c.c. water. In testing water he adds to 100 c.c. of the water a solution of 1 gm. péptone; 2.5 gm. sodium sulphate; 0.5 gm. sodium chlorid and 7 or 8 c.c. distilled water, and keeps it at 37 C. for eight hours to give the typhoid bacilli a chance to proliferate. The culture medium is then treated with a solution of the desiccated gall (3 gm. of the bile powder to 7 or 8 c.c. of distilled water), and 1 c.c. of a solution of 0.1 gm. kristallviolet in 100 c.c. of sterilized distilled water. This checks the development of other germs in the water. After standing for ten or sixteen hours at 37 C., a small amount of this culture fluid is transferred to Endo agar, making a series of tests. He prepares the fresh ox gall by heating in a Koch steamer and filtering, then it is desiccated and pulverized.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

Oct. 19, 1918, **2**, No. 16

*Case of Tuberculous Porphyry Spleen. E. C. Van Rijssel.—p. 1292.
A Prescription Book from the Seventeenth Century. E. Wiersum.—p. 1300.
*Fatal Abortion by Oleum Sabinae. A. Welcker.—p. 1307.

Nov. 9, 1918, **2**, No. 19

*Reform in the Teaching of Medicine. G. Van Rijnberk.—p. 1527.
*Occult Blood in Stools. J. Koopman.—p. 1534.
*Research on Frog Heart. C. Bastert.—p. 1540.
*Vincent's Angina. H. M. Hijmans.—p. 1546.
*Uterine Cancer Without Bleeding. N. J. A. F. Boerma.—p. 1552.

Tuberculous Porphyry Spleen.—The diagnosis during life had been splenomegaly with probable lymphogranulomatosis, but necropsy failed to reveal any enlarged lymph glands and no foci were found in the liver, while the spleen showed advanced tuberculous changes and an aspect of the cut surface resembling that of porphyry. It had evidently become infected from an old latent apical focus. If it had been removed when first affected, the secondary liver and peritoneum tuberculous lesions might have been warded off. An exploratory puncture or incision might have cleared up the case in time. The patient was a man of 67.

Criminal Abortion.—The woman succumbed to what seemed to be a combination of hemorrhagic nephritis, peritonitis with urobilinuria suggesting pathologic conditions in the liver, blood in vomit and stools and psychic changes, with terminal uremic coma. Enough oleum sabinae was found in the cadaver to explain the fatal nephritis and probably the abortion, as the woman confessed to taking it for that purpose.

Reform in Medical Education.—Van Rijnberk refers to a recent book with this title published by Prof. J. Schwalbe, the editor of the *Deutsche medizinische Wochenschrift*. He insists that the curriculum should be revised at least every five years; the necessity for thoroughgoing changes now has been emphasized by the war. It has demonstrated the excessive proportion of specialists, and the necessity for training physicians to be less dependent on specialists. Schwalbe urges reform in two directions, by training the medical students, in practical application of what they are taught, teaching them by letting them do things themselves instead of merely watching the professor do them, and by giving the student a training in philosophy. Elementary logic, philosophy and psychology should be a compulsory part of medical education. This provides a common platform on which all cultivated minds meet on an equal footing, while teaching him the use of the tools with which he is to build up his own knowledge. On the practical side, the students should take part in operations, and be allowed to operate themselves, under good control, as often as possible. Especially in gynecology and obstetrics, looking on is futile; the student must do the work himself.

Schwalbe urges that all hospitals, large and small, should be utilized for practical instruction of the students in internal medicine. He says that all the training the student ever gets now in disease of the throat, nose, ear, skin and sexual organs is merely enough to recognize the condition so that a specialist can be called in to treat it. He declares that students should be trained so they can treat these as well as diagnose them, instead of being merely a directory for the addresses of specialists. He says of instruction in pediatrics that its black side is the diagnosis and treatment of sickness in infants. Sickness in older children much resembles the same in adults, but still one semester of children's diseases is important. The students should be thoroughly grounded in social medicine and hygiene, occupational hygiene, school hygiene, medical legislation, and insurance against industrial accidents. The care and feeding of the sick should be taught both in theory and in practice. The students should be trained in cooking for the sick as well as in the bacteriologic laboratory and in the pharmacy. He insists that there should be a chair for pathologic physiology, general and experimental. If a separate chair is not available, a laboratory for this could be placed in charge of the physiology or pharmacology institutes. In conclusion he declares that more theoretical and practical training in orthopedics, mechanotherapy and massage is also indispensable.

The Significance of Occult Blood in the Stools.—Koopman reports experiences and cites some recently published by others which throw discredit on the finding of occult blood in the stools as a sign of ulcer or cancer. Baumstark reports positive findings now and then in the most diverse pathologic conditions, and others have recently published extremely contradictory findings. Wolff and Daw, for example, found occult blood in 92 per cent. of their cases of trichocephaliasis while Davidsohn obtained only negative results. Rosenthal reported in 1916 negative findings in 100 per cent. of his duodenal ulcer cases, and others found positive findings infrequent. In Koopman's own experience, occult blood was found in the stools only in 2 of 17 certain cases of duodenal ulcer and only in 3 of 7 cases of gastric ulcer. In one particularly striking case a young soldier for nearly three months had complained of pain in the stomach about an hour after eating. The lower margin of the stomach was 1 cm. above the umbilicus. There was no tenderness, and repeated tests for blood in the stools were constantly negative although the young man's diet was not restricted (except meat), and he was strolling about the grounds all day long. The thread impregnation test was negative when applied on three occasions. After a test breakfast, the acidity figure was 20, the total acidity 40, the stratification coefficient 1:2. The young man would have been sent back to service, labeled neurasthenia, if it had not been for a sudden extremely severe hemorrhage from the stomach one morning. Even in cases with a positive thread test, there was often no blood to be detected in the stools.

It is possible for an ulcer to bleed a little and the blood to become disintegrated and absorbed before it reaches the anus. Boas has reported a case with constantly negative findings although a large tumor could be palpated in the cecum. The operation showed that the tumor was of tuberculous origin. Koopman reports a case the counterpart of this, only that the large tuberculous tumor in the cecum was accompanied by

a strongly positive benzidin reaction in the stools, even with the patient in bed on a milk diet. Boas' assertion that occult blood testifies in favor of cancer and against tuberculosis is thus shown to be erroneous. Koopman noticed that whenever the tests for soluble albumin in the stools were positive, occult blood was always found. He suggests that the whole benzidin reaction may be merely an indication of the presence of dissolved albumin—the blood reaction merely a special form of it. On the whole, Koopman reiterates, the significance of occult blood in the stools is slight. It is more often liable to lead to false than to correct conclusions. A number of writers recently have warned that the Wagner reaction is unreliable, but Boas' chief data were based on this. The spectroscopic method, according to Snapper, seems to promise greater reliability.

Hydrocyanic Acid as Antidote for Digalen and Veratrin.—Bastert reports research on frogs' hearts which demonstrated that when the heart action had been arrested by toxic action from digalen or veratrin, the heart could be resuscitated and started to beating again by the action of hydrocyanic acid. The reverse also occurs, digalen or veratrin resuscitating the heart arrested with the hydrocyanic acid. The resuscitation, however, is not permanent, the heart action becoming arrested again sooner or later. Other phenomena observed were that the heart poisoned with digalen to its complete arrest, started to beat again when the pressure was raised, while with hydrocyanic acid arrest, it started to beat again only when the pressure was lowered. The hydrocyanic acid arrests the heart in diastole, and overcomes the arrest when it occurs in systole. It thus acts like the potassium in Ringer's fluid. The tracings from ten different tests are reproduced in detail.

Vincent's Angina.—The severe ulceromembranous sore throat had developed in a woman already much debilitated by two years of lymphatic leukemia. It was known that she was unable to stand arsphenamin, so this was applied only locally. It had a powerful curative action on the lesions in the throat and mouth, but it proved impossible, even for the specialist, to apply it as effectually in the nose, and the patient died. The malignant course was evidently due to the underlying leukemia.

Uterine Cancers That Do Not Bleed.—Boerma reports a case of the infiltrating form of uterine cancer in which pain in one thigh was the only symptom. There was no discharge, no bleeding; the cervix felt smooth but unusually hard. Only examination in general anesthesia revealed the inoperable condition. Another woman, 70 years old, complained of persisting pain in abdomen and lumbar region, but was apparently in good health otherwise, no bleeding, no discharge, but an inoperable tumor was found in the cervix.

Norsk Magazin for Lægevidenskaben, Christiania

November, 1918, **79**, No. 11

*Purpura. C. Johannessen.—p. 1209.
*Treatment of Hemoptysis. N. Lunde.—p. 1253.
Vagotony and Its Clinical Importance. L. Dedichen.—p. 1260.

Purpura.—Johannessen reviews the literature on purpura since Werlhof's first description in 1775 of a mild form of purpura to the recent descriptions of the form with joint and intestinal manifestations. In the mild group the blood platelets disappear more or less completely from the blood while this does not occur in the second group. The purpura in this second group is always associated with some infection, and it seems to be of an anaphylactoid nature. The purpura may be of a chronic intermittent type, with joint lesions, urticaria, colic and intestinal hemorrhage or albuminuria and hemorrhagic nephritis, or polyneuritis, or it may be simple purpura. Or the purpura may be of an acute or subacute infectious type or it may run a fulminating course, Henoch's purpura fulminans. Johannessen reports the details of some cases representing each of these different types. The prognosis is favorable only in the chronic intermittent forms, and not in all of these, especially as the primary infection is liable to entail valvular or kidney trouble or debility that invites tuberculosis.

Purpura displays a heredity and familial tendency. Children with the exudative diathesis or tuberculous taint are peculiarly subject to it, so that improvement of conditions in this respect aids in prophylaxis. Salicylic medication is called for in every case of rheumatic purpura, and it should be pushed. Recent research has confirmed anew that the coagulation time is normal. The trouble seems to be some paralysis of the capillary elements, the result being a notable vasodilatation. This dilatation of the capillaries allows the blood to seep through, and calcium counteracts this vasodilatation. He found this extremely effectual in a recent case of melena neonatorum, which is evidently a manifestation of purpura. The child was born one month before term and the second day it passed pure blood with the meconium. In the course of the night it was given 6 gm. calcium acetate powder (*acet. calcic. pulv.*) and there was no visible blood in the stools thereafter. The blood count showed 2,040,000 reds and 6,160 whites with 300 blood plates to each 2,010 reds. A subcutaneous injection of 10 c.c. of a 10 per cent. solution of gelatin in 40 c.c. of saline was also given and 0.12 gm. pulverized camphor by the mouth. The gelatin injection was repeated the following day. The calcium was suspended the third day and the child rapidly recuperated and is now in the best of health.

Epinephrin is also useful to arrest the paralysis of the contractile elements of the sympathetic nerve terminals, which is a feature of anaphylactoid purpura. From 0.1 to 0.3 c.c. of the 1 per thousand solution can be injected subcutaneously several times a day. It is ineffectual by the mouth. Administration of epinephrin conforms also to Friedrichsen's theory of the nature of purpura. With abdominal purpura the colic pains may be agonizing. Dieting does not help and warm applications give little relief. Atropin paralyzes the irritated terminals of the vagus nerve in the intestines and thus has a sedative action. He gives it by the mouth or subcutaneously in a 1 per thousand solution.

A foreign albumin seems the most effectual of all treatment for anaphylactoid purpura. Especially gelatin, which is nothing but a heterogenous albumin. It is most active given subcutaneously, about 10 c.c. of a 10 per cent. solution, repeated eventually. It can be given in enemas but is far less effectual. Older children and adults can take it in the form of a pudding. Heubner gives it in a 15 per cent. solution with syrup of raspberry, a tablespoonful every second hour. Serum has proved effectual also but peptone seems to answer the same purpose and is more readily available. Given in doses of from 4 to 10 c.c. of a mixture of 5 parts peptone and 0.5 parts sodium chlorid with 100 parts distilled water, the effect seemed to be completely analogous to that of serum treatment and diphtheria antitoxin. Glanzmann explains its action as a desensitization, an antianaphylaxis from the saturation of the antibody by the peptone. It is by the same mechanism that a small preliminary injection wards off the anaphylactic shock when the main injection is given. In the next instalment the hemorrhagic type of purpura will be analyzed.

Treatment of Hemoptysis.—Lunde states that repose and tranquilizing measures proved all that was necessary in thirteen of twenty-four cases of hemoptysis, but in the others more active measures were required. He found that the hemorrhage stopped at once after injection of 3 c.c. of 20 per cent. camphorated oil, with no other measures except in two cases the limbs were wound to expel the blood as the repeated bleeding had been so profuse. In these cases some small artery must have ruptured. The camphorated oil injection also arrested the hemorrhage in a case of severe epistaxis, and this without tamponing. There was a slight renewal of the epistaxis two and five weeks later. Alexander has advocated camphorated oil for hemoptysis, and Weismayr has confirmed its efficacy, but Lunde discovered it for himself when injecting camphorated oil for another purpose. While attempting to make an artificial pneumothorax, the patient collapsed. The camphorated oil cured the collapse and with it the tendency to bleeding from the lungs during the six months to date. Without this direct and convincing experience he would never have ventured to inject this heart tonic for this purpose. In every one of the eleven patients thus treated the hemorrhage was arrested in a few minutes just as if a finger had been pressed on the bleeding point. He theorizes to explain its action, which seems to be of a dual or manifold nature.